REPORT RESUMES

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THE INITIAL TEACHING ALPHABET IN READING INSTRUCTION,
EVALUATION-DEMONSTRATION PROJECT ON THE USE OF I.T.A.
COMPREHENSIVE FINAL REPORT.
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BETHLEHEM AREA SCHOOLS, PA.
FUND FOR THE ADVANCEMENT OF EDUCATION, NEW YORK
PUB DATE FEB 67
EDRS PRICE MF-$0.50 HC-$3.32 83P.

DESCRIPTORS- *READING RESEARCH, *METHODS RESEARCH, *PRIMARY GRADES, *INITIAL TEACHING ALPHABET, ORTHOGRAPHIC SYMBOLS, READING ACHIEVEMENT, READING SKILLS, INSERVICE TEACHER EDUCATION, SPELLING, READING MATERIALS, WRITING SKILLS, READING INSTRUCTION, BASIC READING, BETHLEHEM, PENNSYLVANIA,

A 3-YEAR STUDY OF THE EFFECTS OF BEGINNING READING INSTRUCTION WITH THE INITIAL TEACHING ALPHABET (ITA) AND WITH TRADITIONAL ORTHOGRAPHY (TO) ON PUPILS' READING ACHIEVEMENT IN BETHLEHEM, PENNSYLVANIA, IS REPORTED. THE SCORES OF KINDERGARTEN PUPILS ON THE LEE-CLARK READING READINESS TEST WERE USED TO INSURE THE HETEROGENEITY OF THE TREATMENT GROUPS. IN SEPTEMBER 1963 THE ITA GROUP INCLUDED 455 SUBJECTS IN 15 FIRST-GRADE CLASSROOMS. BY SEPTEMBER 1965 OVER 1400 FIRST GRADERS USED ITA FOR INITIAL READING AND WRITING INSTRUCTION. SUBSAMPLES OF THE ITA GROUP WERE MATCHED WITH THE TO CONTROL GROUP. THE FOLLOWING TESTS WERE ADMINISTERED DURING THE 3-YEAR PERIOD--THE CALIFORNIA TEST OF MENTAL MATURITY, THE CALIFORNIA TEST OF PERSONALITY, THE BOTEL WORD RECOGNITION INVENTORY, THE STANFORD ACHIEVEMENT TEST, THE PINTNER-CUNNINGHAM PRIMARY TEST, AND THE DURRELL-MURPHY DIAGNOSTIC READING READINESS TEST. MEAN SCORES, STANDARD DEVIATIONS, AND T TESTS WERE USED TO ANALYZE THE DATA. THE ITA METHOD WAS ADVANTAGEOUS TO STUDENTS WHO HAD LANGUAGE AND EXPERIENTIAL DIFFICULTIES. THE DIFFERENCE IN VOCABULARY SKILL BETWEEN GROUPS AT THE END OF SECOND GRADE FAVORED THE ITA GROUP. THE ITA GROUP ACHIEVED SUPERIOR READING SKILL AT AN EARLIER TIME, READ MORE WIDELY, AND WROTE MORE PROLIFICALLY WITH GREATER PROFICIENCY. ADDITIONAL RESULTS, CONCLUSIONS, RECOMMENDATIONS, IMPLICATIONS AND AN ADDENDUM OF OBSERVATIONS AND SUBJECTIVE REACTIONS AT THE END OF THE FIRST YEAR ARE INCLUDED. (BK)

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Lehigh-Bethlehem Evaluation-Demonstration Project on the Use of i.t.a.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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COMPREHENSIVE FINAL REPORT

February, 1967

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Evaluation-Demonstration Project
on the Use of i.t.a.

Conducted by
LEHIGH UNIVERSITY AND THE BETHLEHEM AREA SCHOOLS
with Financial Support of
THE FUND FOR THE ADVANCEMENT OF EDUCATION

Directed by
ALBERT J. MAZURKIEWICZ

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ACKNOWLEDGMENTS

In a project of such size and scope, no one person could have accomplished all of the tasks involved in it. Grateful acknowledgment is deserved first by those who contributed to the invitation and basic support of the project: those noted below who represented the Bethlehem Area Schools, and representatives of Lehigh University, who cooperated in seeking partial financial support, which was generously provided by the Fund for the Advancement of Education. Equally grateful acknowledgment of the assistance of the i.t.a. studies staff in meeting the objectives of the project must also be made. Drs. Elizabeth Liddicoat, Daniel Fishco, Sam Zeman, the messieurs Jesse Moore, Andrew Kalata, Philip Hilaire, and the misses Louise Crivellaro, Joan Stecher, Michelle Kollar: all contributed not only their time during office hours, but their ideas, criticisms, and thoughts beyond that which could reasonably be expected.

While a staff is an invaluable asset in any such undertaking as this, of first importance was the exceptional leadership of Dr. Rebecca Stewart, Assistant to the Superintendent for elementary education in the Bethlehem School system and superior working relationship she established. Of equal importance, surely, was the work of the first, second and third grade teachers without whom the project could not have succeeded. While all teachers contributed invariably of their time and efforts beyond the school day, special recognition of the pioneer 15 first grade teachers must be made. Their leadership in embracing the use of a new medium, in working out ideas and in developing materials in the early period must be acknowledged as devotion to educating the child of a superior sort. To (Anne Adams, Martha Coleman, Lorraine Dancho, Margaret Dunn, Helen Evancho, Lorraine Florey, Josephine Huber, Rhea Knipe, Mary Mahoney, Joanne McLernon, Betsy Pappas, Lucille Schrantz, Vertie Silfies, Susan Wachs, Anna Wachter) our special thanks.

Gratitude is also expressed to the Kline Foundation of Allentown, Pa., who sponsored my trip to England for initial investigation of this medium.

Bethlehem's able supervising staff, Dorothy Chubbuck, Rita McNerney and Shirley Bilheimer, is also deserving of commendation for their contribution.

The leadership of Dr. Charles Chaffee, Superintendent of the Bethlehem Area Schools, and the school board of the district must also be recognized.

Lastly, the parents of i.t.a.-taught children, who suspended judgment in the early period of our work yet gave support when criticism developed. must also be acknowledged with warm appreciation.

ALBERT J. MAZURKIEWICZ

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Introduction

Although elementary school graduates are supposed to have at least a fifth-grade reading ability, reports indicate that one-third of the seventh grade population is below this level.

Studies have indicated that the greatest number of poor readers is found in the first grade, but that only a slightly smaller number is found in the second grade; 99 percent of first-grade failures, 90 percent of second grade failures, and 70 percent of third grade failures are due to poor reading ability.

Even when reading instruction is continued in the junior high school on a mandated basis and in the high school on a voluntary basis, data suggest that — while improvement should have been expected — general reading achievement seems even to have deteriorated a bit.

Untold numbers of graduates of accredited high schools score below the tenth-grade reading level on national norms when they enter college.

The National Council of Teachers of English estimates that four million elementary school pupils have reading disabilities. Other reports indicate that reading is a handicap for 25 percent to 35 percent of all high school students and that our nation has a minimum of eight million adult functional illiterates. We are required to introduce remedial reading instruction in elementary school, beginning in the second grade, and to continue it through high school and college and university.

What appears to be wrong? Our methods have been of proven excellence for we *do* develop a high degree of reading skill in the population. While no single factor can be isolated which limits learning, current studies show the spelling of our language to be a significant factor.

Depending on which source is accepted as authoritative (because there's little agreement among linguists, phoneticians, or lexicographers), the English language has 35 to 47 phonemes or sounds. The *American College Dictionary* shows that the 44 phonemes of English are represented by 251 spellings. This makes English about 11 percent phonetic. This fact appears to be a major factor in the reading difficulties noted.

It's recognized that there are many irregularities in the relationship between sound and symbol in English. Almost every phonic rule that children can be taught, or can be led to discover, has exceptions. This makes the teaching and learning of English phonics considerably more difficult than it would be if each letter represented just one sound, as is true or nearly true of several European languages.

In looking at the reading process, we seem to have been looking too long at comprehension as the basis of a definition of reading English; however, comprehension is primarily the *goal* of the reading activity. Meaning is less important as a clue to word recognition in other language systems; in English, comprehension turns out to be one of the major clues to word recognition. In effect, the definition of reading under which we've operated has focused on the purpose of reading rather than on its nature. We quite naturally stressed meaning, which is the goal of reading, at the expense of the process.

The variety of material available for reading instruction indicates the numerous attempts to solve the difficulties children ordinarily have in achieving reading skill in the first grade. Each of these programs can be evaluated as an attempt to meet the motivation with which the child enters school: to learn to read and write. Although numerous shortcomings in the timing of programs as embodied in materials have been noted, it has been observed that when at last the child begins to be exposed to learning, the inconsistencies in spelling of the English language for the average child produce a small element of daily failure which cumulatively undermines the child's self-confidence. The result by the end of the first grade year, ego-satisfaction repeatedly denied, is that the child's self-concept, his ego-strength, is damaged and a general negative attitude toward school, learning, and reading in particular, has been developed.

One of the basic problems connected with learning to read in traditional orthography is suggested here and has been related to the theory which states that, when stimuli are the same but responses different, retroactive inhibition is usually obtained. Thus, it has been seen that if the child is first taught the letter æ, then a bit later that the same symbol represents *a* (calm), then a (apple), etc., each subsequent learning interferes with the previous learning to some extent and confusion in responses to the stimulus becomes evident.

Linguistic solutions recently developed have attempted to simplify beginning reading materials by using regularly spelled words to avoid the orthographic complexity of English. Such linguistic solutions have not received much recognition because they seem to offer solutions which are no better than those provided by the basal reader insofar as the earliest materials are concerned: story content devoid of interest and the rudiments of the program lacking in significance for the beginner. The attempt to simplify phonics toward the end of developing word recognition skill as early in the first grade as possible has been stymied largely by the complexity of the spellings of English. Linguistic solutions as suggested by Godfrey Dewey in the United States and others in England in terms of simplifying the alphabet in prior years achieved little recognition in that a degree of spelling reform was suggested in the proposals.

Sir James Pitman's more recent proposal suggested that the value of a simple and reliable alphabet lies only in its appropriateness for learning to read and offered a design of an interim teaching alphabet to be used only until the pupil is ready to transfer to conventional orthography. Since the

Initial Teaching Alphabet[1] as an orthography approximates traditional orthography[2] while being highly consistent, he felt, it could serve as an introduction to the complex orthography normally used in writing the English language.

Wide-scale studies of the effect of the change in the orthography that the child sees and uses in reading achievement produced significant results early in the experimentation conducted in England. Results which were available from comparable populations suggested that traditional orthography was a significant source of difficulty in beginning reading, that children could learn to read more rapidly and with less observable frustration using the i.t.a. form of simplification, and that reading achievement post-transition was significantly better than that achieved by a comparable population using comparable traditional alphabet materials.

Thus, the use of a one-to-one phoneme-grapheme notational system such as i.t.a., as inferred from the British reports, appears to get at the heart of the difficulty a child has in learning to read and eliminates the factor of retroactive inhibition in early learning.

When a phonemic alphabet (or an alphabet which more nearly provides for a one-symbol-to-one-sound relationship) is used, an operational definition of the reading process makes it a decoding process; writing can be considered to be an encoding process. These are opposite faces of the same coin and in a phonemic alphabetic structure reading and writing could be, and indeed *should* be, taught simultaneously. The usual clues used when teaching reading from a traditional point of view (language rhythm clues, picture clues, configurational clues, structural analysis clues, meaning clues, etc.), in such a system would be of secondary significance, for the symbol itself becomes the most reliable clue for word recognition.

Before the work with i.t.a. began, it was postulated that if English were regularly spelled, then the normal curve of learning (which we have seen exists in virtually every facet of the curriculum as a reflection of the normal distribution of learning potential) would undoubtedly also exist in that aspect of reading called word recognition. Therefore, one of the purposes of the evaluation of i.t.a. which was undertaken with Bethlehem children was to determine if this theory would in fact be substantiated. Table 1 shows that by the ninth month of instruction in i.t.a. the normal learning curve in i.t.a. is indeed demonstrable and that it contrasts markedly with the skewed distribution of an equivalent group working in the traditional alphabet. We might, therefore, conclude at this early point that if English were regularly spelled or *more* regularly spelled (not necessarily perfectly encoded) then learning to read and write would be essentially a simple process, that the mean of word recognition ability for a normal population might very well be at a fifth grade or fifth reader level by the end of the first grade, and that it would be a simple process to isolate those children who are having significant learning — not necessarily *reading* — difficulties, problems of learning related to intellectual potential, emotional or neurological disturbances, etc.

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[1] Abbreviated to the letters i.t.a. hereafter.

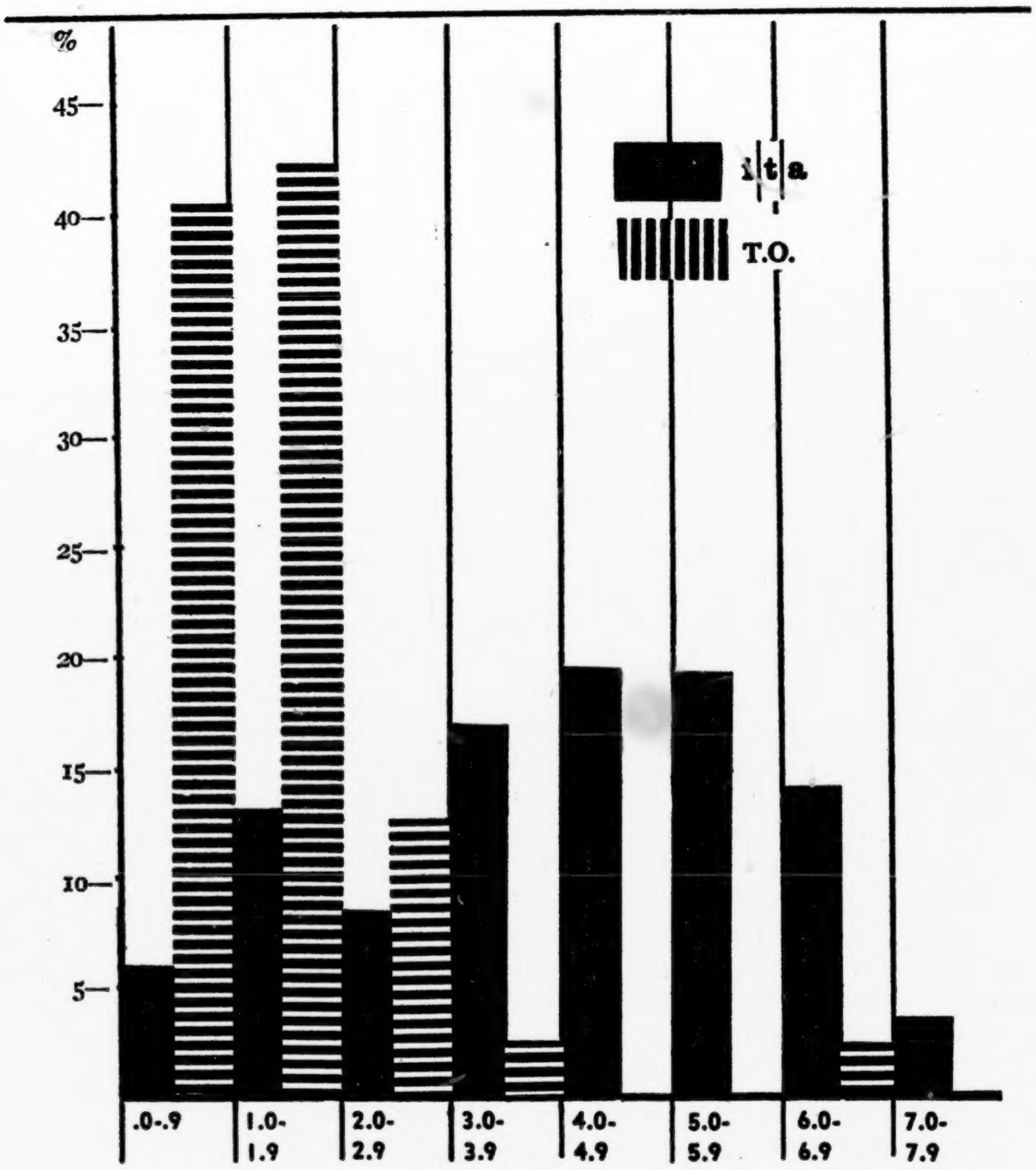
[2] Abbreviated to the letters t.o. hereafter.

TABLE 1

SCHONELL GRADED WORD READING TEST

(Translated to grade scores)

	i.t.a. N=99	t.o. N=87
7.0 — 7.9	4.0%	0%
6.0 — 6.9	14.1%	2.3%
5.0 — 5.9	19.2%	0
4.0 — 4.9	19.2%	0
3.0 — 3.9	16.2%	2.3%
2.0 — 2.9	8.1%	12.6%
1.0 — 1.9	13.1%	42.5%
.0 — .9	6.0%	40.2%



If such an English orthography existed, we might conjecture that the amount of reading disability and the variety of significant reading handicaps existing in the general English-speaking population could be dramatically reduced.

Since few, if any, educational leaders see a complete reform in our orthography as practical in the forseeable future, we can then ask whether we should keep trying for a simplified orthography if a temporary i.t.a., such as Pitman has constructed, can be used successfully to introduce the child to the complex world of English orthography. Thus, the design of i.t.a. is *not* a design for spelling reform; rather, the Initial Teaching Alphabet is what its name implies. In this context, it seems to be the most serviceable pattern that up to now has been proven workable in introducing the child to the reading and writing process: i.t.a.'s design was intended to encourage early reading as much as possible on a frustration-free basis. When the child develops efficient reading skill he makes an effective transition from i.t.a. to the traditional orthography. This usually occurs in the first grade.

An examination of i.t.a.'s use shows it to epitomize a psychologically valid principle which we follow in other areas of life: that learning proceeds from the simple to the complex. It parallels our treatment of another familiar area of the curriculum: handwriting. In our present writing system we go from manuscript to cursive, and we demand a transition which seems to be more difficult for a normal child in a traditional aphabet than the transition in reading which moves from i.t.a. to t.o.

Related Background[1]

The Intial Teaching Alphabet by Sir James Pitman as described to the Royal Society of Arts in 1960 (at that time described as the Augmented Roman Alphabet) was a 43 character notational system. He described the alphabet as follows.

> "(i) it is wholly lower-case; (ii) all but two of the Roman alphabet characters have been retained; (iii) there are 15 augmentations, which are linked manually and auditorily to T.O. [*traditional orthography*] . . . In all there are retained 24 Roman lower-case characters, and there are 19 augmentations.
>
> Lower-case characters have been chosen because they are those with which the child will be most frequently confronted in books; and because the presence of ascenders and descenders evidence each printed word with a more discriminating characterization and makes them more legible than would capitals."

Fourteen of the 19 augmentations are "digraphic (e.g. æ ʃh)." Those of the remaining five augmentations are similar to familiar forms in cursive writing and two are unusual forms. The forty-fourth character, r, was added by the linguistic committee reviewing the first year of research. Pitman's i.t.a.

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[1] Summarized from Mazurkiewicz, A. J., *The Initial Teaching Alphabet and the World of English,* i.t.a. Foundation, Long Island, N. Y., 1966.

as described by Downing appears to make a direct attack on those two features of the standard alphabet which appear to be the root of failure in learning to read the Phonic way:

(1) i.t.a. has enough characters to provide one printed symbol for each of the phonemes of English.

(2) Each character in this alphabet carries only one simple value for phonic word-building.

The fulfillment of the aims of look-say teaching can be achieved because:

(1) There is no disturbance of the visual image through the presentation of alternative patterns.

(2) Every possibility for repetition of the look-say pattern of the word is utilized because there is no competition between alternative patterns.

Mazurkiewicz qualified this statement and noted that Pitman's aim of providing a simple systematic medium for beginning readers *without permanent spelling reform* called for a compromise in his design of i.t.a.; a compromise between, on the one hand, the need for simlification and consistency for the beginning reading code and on the other hand the need to make i.t.a. compatible with conventional orthography so that transition from i.t.a. to standard print should be less traumatic for children when they reach the transfer stage. For example, *c* and *k* have both been kept to represent the same single phoneme in order to reduce the number of words whose spellings, and hence visual cues, have to be changed at this transfer stage. Similarly double letters are retained to help preserve the overall patterns of words, e.g. rabbit, letter.

The alphabet, moreover, is redundant and, in the sense of correspondence of sound to symbol, is 91 to 100 per cent phonetic. Since several letters correspond to the same sound values, a degree of ambiguity is reflected in the alphabet from the beginner's view point. As described by Mazurkiewicz:

> Further ambiguities result from the use of *y* as both consonant and vowel, the rules of spelling, the need to choose alternatives in word forms for transitional values, and conventions in spelling words such as *been,* and words ending in *age.* The resultant orthography is imperfect in a phonetic sense. However, the reduction of ambiguity in sound-symbol correspondence is the major factor which accounts for the ease of development of beginning reading and writing while its imperfections are in agreement with research which describe the need for establishing for the learner a readiness to accept the inconsistencies of the traditional alphabet.

Research in the use of a simplified spelling in reading instruction, however, can be found as early as 1852. An extensive experiment in Waltham, Massachusetts, inaugurated by Dr. Thomas Hill, used Isaac Pitman's Fonotypy with "marked results." William T. Harris, sponsored investigations in the St. Louis schools as early as 1867 using a system devised by Edwin Leigh and reported that from eighteen to twenty-four months could be saved in learning to read through systematic spelling. While Harrison details a variety of experiments in the early twentieth century all of which report improved reading skill, little attention was paid to this research by reading experts as attested to by the lack of reference to such work in the many professional books that have been published on the subject of reading in the last twenty years. The work of the Simplified Spelling Association in England largely went unnoticed.

The early reports on the use of Pitman's i.t.a. in British schools, however, appeared to stir the imagination and came at a time when linguistic solutions to reading instruction were being given serious consideration. The research in England, reported by Downing, in its early form suggested that a major departure from approaches to reading instruction in fashion at the time was being initiated. His reports appeared to confirm earlier findings that reading achievement was induced earlier, was easier to attain, and was attained by a vastly larger percentage of a population than usually expected. Later reports appeared to confirm the early results, and he concluded that i.t.a. "does accelerate the acquisition of basic reading skills, and this primary training in i.t.a. is transferred to t.o. in such a way that a very substantial saving is gained in learning to read t.o."

His early reports noted that

(1) "young children get through their beginning reading program faster when their books are printed in i.t.a.

(2) They can recognize more words in print when they are in i.t.a.

(3) They can accurately read continuous English prose more readily when it is printed in i.t.a.

(4) They can comprehend more continuous English print if i.t.a. is used.

(5) They can read faster when the medium is i.t.a."

These seem to have been borne out by later results.

EVALUATION OF THE INITIAL TEACHING ALPHABET

The evaluations established for this study are as follows:

(1) Is there a difference in reading achievement in the tenth week and in the eighth month (April 15th) of school as reflected in instructional level achievements when the same method is used but the medium (Traditional Orthography or Initial Teaching Alphabet) is different?

(2) Is there a difference in reading achievement of i.t.a. and t.o. groups at intermediate points in instruction when the groups are tested on identical material but printed in the orthography used in instruction?

(3) Is there a difference in reading and spelling achievement on a t.o. standard between the i.t.a. and t.o. matched groups in the ninth month of instruction in the first, second and third year?

(4) Is there a difference in reading achievement of the i.t.a. and t.o. groups in the ninth month of instruction in the second and third year on t.o. measures of oral reading accuracy and word recognition?

(5) Is there an observable or measurable difference in writing behavior of i.t.a. and t.o. taught groups at the end of the first, second and third grade years?

Description of the Variables Used in the Evaluation

Instructional Level. This level corresponds to a designated level of a reader and is characterized by the child's ability to recognize words in context and comprehend the stories of that reader. The criteria used to judge his achievement and determine whether he is adequately placed for instruction in this reader are identified as a score in word recognition in context of 90 to 97 per cent and an ability to comprehend the material with 70 to 79 per cent accuracy on factual, inferential, and vocabulary questions.

Instructional Level Achievement. Botel defines achievement on this test of word recognition as a score of 70 per cent or better at one or more levels. This test has twenty word items at the following levels: Pre-Primer, Primer, First, 2^1, 2^2, 3^1, 3^2, 4, and measures the child's ability to identify a word without the aid of context.

Reading Accuracy. This subtest from the *Gilmore Oral Reading Test* measures the child's ability to identify accurately the words of a selection being read orally at sight.

Gates Word Pronunciation Test. A child's ability to identify high frequency words in which a phoneme is spelled in an irregular manner is tested by this list.

Phonetically Regular Words Oral Reading Test. This test measures a child's ability to recognize words in which all parts are regularly spelled.

Terms Defined. In this evaluation only the end results of instruction in reading and not the reading process itself are studied. The use of such terms as the language arts approach, the co-basal program, the Initial Teaching Alphabet, and Traditional Orthography are basic to an understanding of the evaluation.

1. *The Initial Teaching Alphabet.* A forty-four character notational system representing the forty sounds of English. A complex of rules in its use permits the creation of a relatively unambiguous orthography.
2. *Traditional Orthography.* The standard method of grouping the 26 letter alphabet to form words. This is more generally recognized as the way we normally spell words.
3. *Language Arts Approach.* A method of instruction in which the language of the child is used in building an awareness of the relationship of sound to symbol, words to print, and is followed by the use of writing to reinforce and extend this learning. Listening, speaking, reading, and writing are used simultaneously in instruction to develop reading and writing skill.

4. *Co-basal Program.* The use of the basal reader series in a program of reading instruction where each series is used with a segment of the population either to avoid duplication of experience with resultant loss in interest in the material or to meet the difference in the ability of the children of a given class. The latter use is the one which was of first importance in this study.
5. *Frequency of Sound Occurrence Order.* The symbols of the i.t.a. have been ordered in a sequence which was based on a study of the frequency of usage of a sound in the speech and writing of children.[1] The introduction of the graphemes of traditional orthography followed the sequence of sounds given by the *Early-to-Read* i.t.a. program.[2]

SUBJECTS

General Description

The children on which the study was conducted reside in the city of Bethlehem, Pennsylvania. Bethlehem is a community, settled by Moravians, which has felt the impact of every wave of immigration from Europe and is now absorbing families from Puerto Rico. At the time of the 1960 census the population of some 70,000 was 88 per cent white native, 11 per cent foreign born, and one per cent Negro.

The nature of the community may be characterized by noting the range of employment of the fathers of the children. Manufacturing employment in the Allentown-Bethlehem-Easton Metropolitan District, at over 45 per cent of total employment, is considerably above the national average of 25 per cent and the Pennsylvania average of 33 per cent. However, the District is neither unique nor strongly atypical relative to many other communities in the northeastern manufacturing belt. Employment in manufacturing includes a wide socio-economic range of executives, blue-collar workers and laborers in corporation and company offices and research centers. In addition to the usual complement of business and professional employment, there are the faculties and staffs of Lehigh University and Moravian College. There are three low-cost housing centers. Some families still live on and work farms laid out generations ago by early settlers. Suburban areas are steadily expanding within the city limits and into two relatively rural townships which are joined by union with the city to form the Bethlehem Area Public School District. The 1960 census report indicates that the median income of the community is $5986.00.

The range of intelligence in the first grade classrooms, based on past findings, is normally distributed in the population. Culturally-deprived sections of the population have had a failure rate in first grade of 33 per cent, while the overall failure has been at 11 per cent, somewhat below the national norms.

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[1] Dewey, G., *Relation Frequency of English Speech Sounds,* Harvard University Press, Cambridge, 1923, is the basic study of this occurrence.

[2] *Early-to-Read i.t.a. Series,* Mazurkiewicz, A. J. and Tanyzer, H. J., i.t.a. Publications, N. Y., 1963.

Part I.
The 1963-64
First Grade Group

Pupil Selection

To obtain data and to satisfy the purposes set for this study, the first grade pupils entering the Bethlehem Schools were assigned to classes on the basis of the results of the *Lee-Clark Reading Readiness Test* administered in the Spring of the kindergarten year preceeding beginning work with i.t.a. The assignment was random with the exception that a proportion of the group falling in each of the four levels of the test was assigned to each classroom in school buildings where there were more than one class in each grade. The purpose of this procedure was to insure that each classroom was heterogeneous with respect to readiness for formal reading instruction.

Geographical Distribution

To insure that the pupils in both of the experimental groups (i.t.a. and t.o.) were representative of the poplulation, schools in each of the areas of the community were selected. Selection was based on comparability of areas so that urban, suburban, rural, low, mid, and upper socio-economic children would be included in each group. In this manner it was believed that a stratified sample of the Bethlehem population would be obtained.

Formation of samples: The first grade pupils (N=1392, Oct. 1, 1963) entering the Bethlehem Schools were assigned to classes on the basis of the results of the *Lee-Clark Readiness Test* administered the previous spring. The assignment was random with the exception that a proportion of the group falling in each of the four levels of the test was assigned to each classroom in school buildings where there were more than one class in each grade. The purpose of this was to assure that each classroom was heterogeneous with respect to readiness for formal reading instruction.

The i.t.a. group in September included 455 students in a total of fifteen classrooms,[1] located in all sections of the school district. The i.t.a. group was generally considered as representative of the total first grade enrollment with the exception that a larger proportion of pupils from the low socioeconomic areas was included in the i.t.a. group. More specifically, about 40 percent of the i.t.a. group and 25 percent of the Traditional Alphabet group were from such areas. However, in the selection of the subjects, geographic, economic and social factors were considered, with the result that the i.t.a. group was considered reasonably representative of the whole.

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[1] *In addition, three primary special education classes, three remedial reading groups and several beginners in classes for the physically handicapped were instructed in the initial teaching alphabet.*

A comparison of the means and variabilities of the two groups obtained from administration of the *California Test of Mental Maturity* in September, 1963, is presented in Table 2.

TABLE 2

Chronological Age and Group Intelligence Test Results of the i.t.a. and t.o. Groups — September, 1963

	i.t.a N=454		t.o. N=875		
Variable	M	SD	M	SD	t
Chron. Age	74.37	5.22	74.37	5.11	.116
IQ Lang.	98.09	17.13	100.28	15.64	.375
IQ Non Lang.	99.36	16.92	101.93	15.93	.435
IQ Total	99.00	15.26	101.34	13.57	.398

The t tests of the obtained means and variabilities of the i.t.a. and t.o. groups revealed the mean differences not significant at the 5 percent level. Similarly, the standard deviations obtained on each distribution revealed no significant difference in the spread of the scores.

Data on the two groups were available from the results of the administration of the *Lee-Clark Readiness Test administered* in the spring of 1963 when the students were in kindergarten. Additional data were obtained by administration of the California Test of Personality in the fall of 1963, one week after the administration of the California Test of Mental Maturity. Group means and standard deviations are presented in Table 3.

TABLE 3

Means and Standard Deviations of Certain Variables of the i.t.a. and t.o. Groups, as obtained by Standardized Tests

	i.t.a. N=454		t.o. N=875		
	M	SD	M	SD	t
Age in Months	74.93	5.40	74.38	5.15	0.128
California Test of Mental Maturity	99.00	15.26	101.34	13.57	.398
Lee-Clark Readiness Test	49.14	10.90	50.59	9.97	0.426
California Test of Personality	29.60	20.30	31.30	19.22	0.793

The t-tests on the four variables in Table 3 indicate the differences in obtained group means were not significant; therefore, the two populations appeared to be comparable. However, the dispersion of the array of i.t.a. scores appeared somewhat greater, and scores of the t.o. group tended to be slightly higher. These differences were not considered significant and did not constitute a strong challenge to the assumptions that (1) the i.t.a. population was comparable to the t.o. population and (2) that both groups could be taken as reasonably representative of the population of the first grade. Accordingly, the demonstration and evaluation proceeded with the two assumptions intact, though it was recognized that differences in socio-economic status (and therefore linguistic skill) between the populations limit the comparability.

Preparation of Teachers: The fifteen teachers who volunteered to use the initial teaching alphabet as the medium for reading instruction in first grade classrooms received two and one-half days of orientation.[1] The initial half-day on June 13, 1963 consisted of an introduction to the rules for spelling with i.t.a. and training in writing the symbols. Individual assignments included writing two letters in the initial teaching alphabet to the project director. In the first letter due July 15, the writer described his summer activities. In the second, due August 15, the writer was asked to detail difficulties encountered in using i.t.a. to transcribe speech sounds.

These difficulties were then used as the basis for workshop activity during the first of two subsequent day-long sessions. The teachers generally had little difficulty in transcribing sounds using i.t.a. The greatest problems came in the form of specific notational errors which resulted from habits acquired from long use of spelling practices indigenous to the traditional alphabet. For example, the *z* sound in his, was, and business transcribed as an *s* rather than a reversed *z*, and the *uh* sound, identified as a schwa, was difficult for most teachers to hear. These tendencies were eliminated by specific instruction.

The workshop activities included a review of the use of experience and language-arts approach to reading instruction. Mr. John Downing joined the staff in presenting procedures designed to encourage transition to traditional print.

Uncertainty regarding the availability of instructional materials introduced the possibility that additional time for preparation of teachers might be required. In the original plan, the Nesbit *Jon and Janet* series was selected as the instructional material. Because it was feared this series might not become available in time, an alternate instructional program was developed. The essence of this alternate plan was an integrated language-experience approach during the first part of the year and, if necessary, throughout the year.

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[1] *Although the training sessions were planned for the fifteen first-grade teachers, other interested staff members, curriculum consultants, teachers of special education and remedial reading, teachers of kindergarten and first grade, and several substitute teachers attended and received training.*

In July, one month prior to the workshop, information was received that the Nesbit materials would not be available. Assurance by all responsive parties in England, clearance of custom procedures, and confirmation of orders placed with Nesbit had not prevented the disappointment. In addition, it appeared that materials to be published in the United States would not be available until later in the school year.

Plans were then made for an additional two-day workshop emphasizing the alternate plan of using the integrated language-experience approach for instruction in i.t.a. with trade books for supplementary reading. However, these tentative plans were cancelled when it was learned that materials published in the United States would appear six months ahead of schedule. The initial guidebooks accompanying the materials provided teachers with adequate support, and they concluded further workshop activity was not needed.

However, the teachers for the i.t.a. children continued to meet informally for the purposes of creating and transliterating classroom materials. Supplementary reading, instructional, and curricular materials also were produced in this manner.

Program of Instruction: Instruction in i.t.a. emphasized the deciphering of printed code by teaching children to associate each of the forty-four symbols of i.t.a. with the speech sound it represented. Simultaneously, reading activities designed to develop comprehension skills were stressed in order that each child from the beginning would regard reading as a process for obtaining meaning.

Teaching was paced to individual rates of learning. The structure of whole group instruction was modified from the outset by these individual rates. Small group instruction became the general practice, with individual instruction provided when it seemed necessary.

The teachers had complete freedom in selecting teaching methods. In general, they utilized an experience approach combined with group activity and/or individualized instruction.

General Observations: Initially, teachers were very anxious about using the new medium in writing activities. Their principal concern was about correct spelling. After about three weeks, this anxiety disappeared and a new anxiety developed, typified by the question: "How far have other teachers gotten?" After six weeks teachers were heard expressing concern that children were not reading books. By that time children *were* reading experience stories, sentences, words and phrases, and simple story content of preprimer reader level (part of a small quantity of Nesbit materials released for the research project), but they were not using conventional books. So the concern was expressed: "Last year they'd be in a pre-primer by now" and "we aren't reading *Book Two* yet."[1]

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[1] *Book numbers refer to the labeling system of materials published in the United States.*

After ten weeks of instruction an estimated 10 percent of the i.t.a. children had completed *Book Two*. Observation by supervisors and reports by teachers indicated that these children had effective reading vocabularies of 320 words. A similar proportion of the t.o. children could read effectively at the third pre-primer level in the language-experience orientated co-basal program and had a sight reading vocabulary of sixty-six words.

At the beginning of the fifth month of instruction, differences between the i.t.a. and t.o. children in writing abilities were observable. The i.t.a. children demonstrated an unusual range of achievement in written language ability. Some children wrote connected discourse of several paragraphs, each seven to nine sentences in length. Others, however, were limited to the ability to write the words which could be transcribed from the sound-symbols mastered.

By comparison, students in t.o. classes were much more limited in writing ability. Only the most exceptional children were able to write a simple sentence. It is difficult to describe the differences in writing ability between the groups as anything less than spectacular.

Specific Observations: A reading program using i.t.a. could be adjusted to individual rates of learning. The initial learning task the child faced was to acquire skill in making, remembering and using associations between the sounds of speech and the printed i.t.a. symbols representing these sounds.

Mastery of the symbol-recognition program and development of the ability to blend sounds into words was developed in three to four months by able learners. Average learners achieved this skill by the fifth or sixth month.

Teaching with the initial teaching alphabet presented no unusual difficulties. Teachers prepared supplementary materials as indicated by individual needs, the range of learning rates, and the kind and degree of reinforcement activities or as suggested by the curriculum and the seasons.

Evaluation: By the fifth month of instruction the problem of systematic evaluation arose. It was obvious that no standardized test would adequately measure the achievement of the i.t.a. group in a manner to make a defensible comparison with the t.o. group. Similarly, it was recognized that the results obtained from a transliterated informal test would indicate ability in i.t.a. only and would not constitute a basis for inference on ability in t.o.

The *Botel Word Recognition Inventory* was chosen as the test which seemed suitable for the purpose of an informal comparison of limited samples of both populations in the fifth month of instruction. The inventory was transliterated for administration to the i.t.a. sample. Botel has established an achievement of 70 to 90 percent word recognition at any level as indicative of the respondent's instructional level.

The data reported in Table 4 were obtained from the administration of the *Botel Word Recognition Inventory* to a sample of the i.t.a. and t.o. groups representing the middle-to-upper socio-economic segment of the school population. The i.t.a. and t.o. samples were comparable in chronological age and range of I.Q.

TABLE 4

Frequency and Proportion of Instructional Level Achieved by the i.t.a. and t.o. Samples on the *Botel Word Recognition Inventory* After Five-months of Instruction

Botel Inventory Instructional Level	i.t.a. Sample N=78			t.o. Sample N=56		
	f	f/n	cum f/n	f	f/n	cum f/n
4_2	7	.09	.09	0	.00	.00
3_1	21	.27	.36	0	.00	.00
3_2	17	.22	.58	2	.04	.04
2_1	5	.06	.64	1	.02	.06
2	8	.10	.74	2	.04	.10
1	9	.12	.86	10	.18	.28
P	4	.05	.91	20	.35	.63
PP and below	7	.09	1.00	21	.37	1.00

The data obtained on the performance of the samples of the i.t.a. and t.o. groups indicated that it is possible to develop a relatively high degree of reading skill using the traditional alphabet and a language arts orientated co-basal program of instruction. A small segment of the t.o. sample (approximately 4 perecnt) achieved third reader level by the end of the fifth month. By the same time more than half of the i.t.a. students (approximately 58 percent) achieved a third reader level on the transliterated inventory, and 9 percent of the i.t.a. sample achieved at the fourth reader level.

The median score of the i.t.a. sample was at the three one level in contrast to the median of the t.o. sample which was found at the primer level. Nine percent of the i.t.a. sample in contrast to 37 percent of the t.o. sample earned scores at or below pre-primer level.

An examination of the performance of the i.t.a. sample with particular reference to the reading level reached by those who had mastered all forty-four symbols revealed that complete mastery insured word recognition ability equivalent to *Book Three, Level Two*. Students who had been exposed to all forty-four symbols in reading instruction but had directed instruction on only thirty-seven symbols achieved a word recognition level of Book *Three, Level One*.

The scores earned by i.t.a.-instructed children were assumed valid within the i.t.a. context only. No generalization about post-transitional reading ability was warranted by these data.

Transition was begun by a segment of the i.t.a. group in the third and fourth month of instruction. An estimated 5 to 8 percent of children of the middle-to-upper socio-economic segment were reading traditional materials at that time, though their instruction continued in i.t.a. materials. These students appeared to have no difficulty in reading in either medium. It was concluded at this point that transition was evolving naturally.

By the seventh month, able learners were using i.t.a. materials which in the traditional form would have a grade level readability range of 2.6 to 3.2, and were reading and writing such word forms as contractions, possessives and comparatives.

Investigators recognized that the generally accepted test of the pupil's ability to deal effectively with a given reader is the ability not only to recognize words but also to understand the content. Table 5 contains data reported by teachers during the eighth month on the proportions of the two groups using instructional materials with readability levels from third reader to primer or below. Returns were received from 95.3 percent.

TABLE 5

Proportion of i.t.a. and t.o. Groups
At Instructional Levels
As Reported by Teachers
April, 1964

Reader Level	Proportion of i.t.a. (N=451)	Proportion of t.o. (N=814)
Third	24.0	00.0
Second	50.7	6.1
First	14.0	74.4
Primer or below	11.3	19.5

Table 5 reveals that 24 percent of the i.t.a. group was rceeiving instruction in i.t.a. materials at a third-grade readability level, 50.7 percent in materials at a second-grade readability level, 14 percent at a first-grade readability level and 11 percent at or below primer readability level. In contrast, 6 percent of the children were receiving instruction in t.o. materials at second-grade readability level, 74 percent at first-grade readability level and 19.5 percent at or below primer readability level.

Because 40 percent of the i.t.a. group and only 25 percent of the t.o. group are drawn from the group of children usually described as "culturally disadvantaged," a comparison of the instructional levels of the two groups presents a somewhat distorted picture. These proportions of the i.t.a. and t.o. groups include the children of Puerto Rican and Negro ancestry as well as those children of low socio-economic status in the Bethlehem first-grade population.

The decision to include a larger proportion of these children with verbal and experiential deficiencies in the i.t.a. group was made at the beginning of the study because results of the English experiment indicated that i.t.a. presented particular advantages in overcoming the learning difficulties of the culturally disadvantaged child.

At the opposite end of the socio-economic continuum, sharp differences were also observed in the readability levels of the materials used in the classrooms. Segments from the average to high economic status in both t.o. and i.t.a. are compared in Table 6.

TABLE 6

Proportion of the Average-to-High Socio-Economic Segment of i.t.a. and t.o. Groups at Instructional Levels as Reported by Teachers, April 1964

Reader Level	Proportion of i.t.a. N=270		Proportion of t.o. N=612	
	f/n	cum f/n	f/n	cum f/n
Third	40.0	40.0	00.0	00.0
Second	53.3	93.3	8.2	8.2
First	5.6	98.9	81.0	89.2
Primer or below	1.1	100.0	10.8	100.0

The comparison indicates that 93 percent of the i.t.a. children and 8.2 percent of the t.o. children of the average to high socio-economic status segment were receiving instruction in materials at the second grade or above readability level. Forty percent of this i.t.a. proportion were reading materials of third-grade level difficulty.

The less than 2 percent of i.t.a. children still receiving instruction at primer level or below stands in contrast to nearly 11 percent of t.o. children from this same segment of the groups. This seemed to indicate that non-readers in the average to high socio-economic segment of the i.t.a. group, were nearly eliminated; whereas, in the similar segment of the t.o. group the usual incidence of non-readers occurred.

Table 7 presents data of the readability levels of materials used by children identified as having low socio-economic status.

TABLE 7

Proportion of the Low Socio-Economic Segment of the i.t.a. and t.o. Groups at Instructional Levels as Reported by Teachers, April 1964

Reading Level	Proportion of i.t.a. N=181		Proportion of t.o. N=202	
	f/n	cum f/n	f/n	cum f/n
Third	00.0	00.0	00.0	00.0
Second	47.0	47.0	00.0	00.0
First	26.5	73.5	54.5	54.5
Primer or below	26.5	100.0	46.5	100.0

The comparison of the instructional levels of materials in use the eighth month of school with the lower socio-economic segment of both i.t.a. and t.o. children tended to support the results of the English study that i.t.a. presents particular advantages for children with language and experiential deficiencies.

In addition to the favorable position of the i.t.a. children with respect to levels of instructional materials used and word recognition skills achieved, it was clear that the i.t.a. children made greater progress in writing abilities. Furthermore, informal spelling achievement tests administered in two classrooms using i.t.a., one from each segment of socio-economic status, indicated that children in both classrooms achieved 86 percent accuracy on words spelled similarly in i.t.a. and t.o.

Informal transition from i.t.a. to t.o. was made by able learners in November and December as they were introduced to books at home or selected them on visits to the school libraries. Structured or formal transition using *Book Seven* of the i.t.a. series was begun with able learners in April. At this time teachers reported that about 64 percent of the i.t.a. group having average-to-high socio-economic status were already reading library materials printed in t.o.

Formal instruction in transition was based on the traditional spelling curriculum.

Since the goal of i.t.a. instruction is ability to read in the Traditional Alphabet, standardized tests for measuring achievement were used in their traditional alphabetic form to document the status of the children. Though the advantage in such testing at the end of the first grade year seemed to be to the advantage of those taught only in traditionally-spelled materials, a fair test of the i.t.a.-taught child's ability to deal with traditional orthography at this point in the evaluation seemed possible.

Because one of the first administrative questions is about the ease of moving from an i.t.a. class at any point in a school year to a traditional alphabet classroom elsewhere, it was felt that the i.t.a. group's ability to deal with conventional orthography, though only 26% of the group had made the transition to traditional alphabet materials by the middle of May, might provide information in answer to the question.

A summary of raw scores obtained by the administration to both groups of the California Reading Test (in traditional print) is presented in Table 8; examination suggests that no difference in reading achievement exists between the groups.

TABLE 8

Reading Achievement Results for the i.t.a. and t.o. Groups
May, 1964

California Reading Test	i.t.a N=454		t.o. N=875		
	M	SD	M	SD	t
Lower Primary ……	59.60	17.42	61.15	16.15	0.433
Upper Primary ……	41.11	19.28	41.29	16.90	0.064

The data in Table 8 suggest that though two similar groups differ in the media by which they learn, no significant difference in their measured reading achievement on a t.o. basis exists near the end of a year's instruction. The data may be interpreted further to indicate that when the i.t.a. taught group is abruptly confronted with a t.o. test, their performance as measured by standardized tests in t.o. may not be significantly different from children taught only in t.o.

To eliminate the effect of the conditions — a relatively small proportion of the i.t.a. group had begun transition at the time the test was given and the i.t.a. group contained a larger proportion of pupils from the lower socio-economic segment — on end-of-the-year achievement results, a sample was drawn from both i.t.a. and t.o. children, matched (within two points) on I.Q., socio-economic status, sex, and chronological age. An additional criterion for selection of individuals for the i.t.a. sample was that each had been receiving instruction in *Book Seven,* the transitional reader, for at least a week. The data in Table 9 compare the proportion of the selected matched samples of the i.t.a. and t.o. children achieving scores expressed in grade-levels on the *California Reading Test, Lower Primary, Form W.*

TABLE 9

Number and Proportion of Reading Grade Equivalent Scores Achieved by the Selected Matched Samples of the i.t.a. and t.o. Children, May 1964

Reading Grade Equivalent	i.t.a. Sample N=129		t.o. Sample N=129	
	N	percent	N	percent
4.0+	2	1.5		
3.5 - 3.9	5	4.0	3	2.3
3.0 - 3.4	31	24.0	11	8.5
2.5 - 2.9	48	37.7	37	28.6
2.0 - 2.4	31	24.0	35	27.0
1.5 - 1.9	12	9.0	28	21.0
1.0 - 1.4			15	11.6

Median, i.t.a. Sample in the 2.5 - 2.9 interval.
Median, t.o. Sample in the 2.0 - 2.4 interval.

Examination of the data in Table 9 reveals that the median achievement of the sample of the i.t.a. children is contained in the interval, 2.5 - 2.9, and the median achievement of the sample of the t.o. children in the interval 2.0 - 2.4. Comparing the proportion of each group achieving a reading grade equivalent score of third grade or above, it is found that 29.5 percent of the i.t.a. sample and 10.8 percent of the t.o. sample fall in this category.

Table 10 displays the difference in reader level achievement in the progress of the first grade children as noted on matched pairs when the difference in socio-economic status is eliminated. (Matched within one point in I.Q., on sex, and socio-economic status). Thus observed differences in achievement as well as reader level achievement appear to be confirmed by these results.

TABLE 10

Means and Standard Deviations of the Matched Samples on Reading Achievement Scores in May 1964

May, 1964 California Reading Test: Upper Primary	i.t.a. N=196 M.	 S.D.	t.o. N=196 M.	 S.D.	 t
Vocabulary	27.10	8.19	24.56	7.83	3.47#
Comprehension	19.14	9.26	20.16	0.13	1.16

# significant at the 1% level.

Promotion Procedure: It was agreed that for promotion to the second grade a child should demonstrate competency in reading Book 4 (2.4 readability) of the basic program and demonstrate the ability to write sentences which the teacher and children could understand. These standards were higher than those used for promotion in the t.o. group (primer level competency). Some children were retained in the first grade for emotional or social maturity reasons though achieving these standards; others were passed to the second grade though reading only at Book 3 (first reader) level. The guideline was modified to a simple assessment of the benefit to the child that might be gained by a second year of first grade experience, especially with regard to promoting security and improving competence.

Preparation of Second Grade Teachers: The fifteen second grade teachers assigned to receive the i.t.a.-trained first grade classes visited the classes during the spring semester to become acquainted with the levels of skills and abilities of the children. Workshop activity to interest teachers in the use of i.t.a. was provided in June and September over a two-day period. The initial half-day on June 17, 1964 consisted of an introduction to the rules for spelling with i.t.a. and training in writing the symbols. Individual assignments included transliteration of a basic vocabulary of 220 words and writing a letter in the Initial Teaching Alphabet to the project director. The first assignment was due on July 15. In the letter, due August 15, the writer was asked to describe difficulties encountered in using i.t.a. to transcribe speech sounds.

These difficulties were then used as the basis for workshop activity during the first of the subsequent day and a half sessions. The teachers appeared to have less difficulty in transcribing sounds using i.t.a. than the first year's teacher group. Again, the greatest problem came in the form of specific notational errors, the result of habits acquired in long use of spelling practices indigenous to the traditional alphabet. These tendencies were eliminated by specific instruction. The remaining half-day session was devoted to:

1. Orientation to procedures designed to encourage transition to traditional print for that segment of the children which had not as yet made formal transition.

2. The use of a functional approach to teaching spelling in which the child's i.t.a. encodings would gradually be eliminated and in which errors in compositions would serve as the focus for the spelling program.

3. The use of an i.t.a. to t.o. dictionary[1] in writing activities and in introducing the child to the use of the standard dictionary.

4. The use of basal reading programs in traditional print and the modification of suggested activities so that reading and thinking skills and vocabulary development were the major foci.

5. Introduction of cursive writing as a more natural development of writing from the combined manuscript and cursive forms of i.t.a., and

6. Orientation in the development of phonics and structural analysis as a function of the spelling program.

Program of Instruction: Teaching was paced to individual rates of learning so that transition from i.t.a. to t.o. materials followed the developmental sequence. Review instruction following the summer hiatus was assumed necessary for children in i.t.a. Such instruction emphasized the deciphering of the printed code by reviewing the sounds associated with the 44 symbols of i.t.a.

Since it was assumed that all children would lose some reading skill over the summer vacation period, t.o. grouping of children post-transition was based on teacher and supervisor judgments. Thus top groups were placed in 3^1 reader materials while less able (intelligence and achievement used as basic criteria) were placed in 2^1 and 2^2 readers. It was recognized that some teachers had moved children too rapidly through transition activities and therefore, these children needed simpler materials for security purposes. While an estimated 60 percent of the children made transition before the end of the school year, a degree of conservatism in placing children into traditional materials was characteristic.

Although 3^1 materials proved quite easily read and, therefore, a movement to the more challenging 3^2 materials might have been encouraged, the procedure followed was to use the simpler material for a program nucleus and to encourage wide supplementary reading to extend reading efficiency. While it might appear that such a procedure did not fully utilize any advantages gained in the first year, the assumption that higher level concepts could not be dealt with by such children needed to be investigated and therefore a degree of caution seemed warranted at the time. Such assumption proved incorrect since the children had little difficulty either with the vocabulary or content of the 3^1 material. However, the teachers felt that the confidence of children was bolstered by using books at this readability level.

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[1] Kae-em Associates, Inc., Bethlehem, 1964.

The teachers had complete freedom in selecting teaching methods though workshop activities suggested the general procedures teachers were expected to follow. Thus some teachers introduced cursive writing as early as October while others delayed for varying periods.

General Observations: The anxiety noted in the first grade teacher group in the beginning period appeared also to exist in the second grade teacher group and to be of more marked duration. It was believed this anxiety reflected the fact that a second grade teacher, taking on an i.t.a. class, had to adjust to a more diversified range of activities in addition to the anxiety of using i.t.a. for the first time with children who are somewhat expert in the use of the medium. This anxiety period, however, ended by the fifth week of school as teachers adjusted to the challenge of working with children in two media at various levels of competency.

A survey of instructional levels of the i.t.a. and t.o. children was made during the tenth week to determine the number of children who had not formally transferred to t.o. materials as well as to determine the number of children at each level. This survey was completed prior to changes in grouping based on children's performances.

As noted in Table 11, 34.4 per cent of the i.t.a. children had not at this time formally transferred and were instructionally placed at the first through third reader levels in i.t.a. materials. Slightly less than sixty-five per cent (64.5) of the i.t.a. children were instructionally placed in t.o. materials and, as noted 34.4 percent of this group were reading 3^1 materials as compared with 2.4 per cent of the t.o. group.

TABLE 11

Second Grade Instructional Levels at the Tenth Week Point of the i.t.a. and t.o. Children Before Standardized Testing and Performance Effected Changes

	i.t.a. N=367 15 Teachers	t.o. N=869 31 Teachers
t.o. Reader Levels		
3-1	35.4%	2.4%
2-2	15.3%	20.5%
2-1	12.2%	44.4%
1st	1.1%	28.1%
Primer or below	.5%	4.6%
	64.5%	
i.t.a. Reader Levels		
3-1	18.0%	
2-2	3.8%	
2-1	6.8%	
1st	6.8%	
	35.4%	
Total	99.99%	100.00%

The differences in writing ability noted during the course of the first grade year between the groups seemed to be as great during the second year. Children taught using i.t.a. appeared to retain writing skill as t.o. spellings were introduced.

Specific Observations: The reading and writing program after i.t.a. presented no unusual problems. Teachers who tended to follow explicitly the teacher guides of traditional basal programs found that some children were confused by the phonic rules and that such teaching was redundant in that the children generally had no need for this form of patterning in word recognition activities.

The program of word recognition following i.t.a. instruction consisted first of recognition of the various t.o. spelling patterns used to represent the sounds of English, then structural analysis skills, then dictionary activities for independence.

Teachers indicated that post-i.t.a. children appeared independent to a greater degree than prior experience with this age child suggested was possible. They noted that large segments of classes, rather than a small percentage, could and did work independently. They noted that these children were interested in pursuing a unit in the curriculum for as much as a week to ten days rather than the usual two or three days and that independent investigation of topics and use of encyclopedias appeared early in the year.

The teachers further indicated that continued interest in writing permitted a more natural basis for extended language skills while spelling was more easily related to its functional value in communication than was permitted or related in their previous experience. Progress in reading materials appeared to be rapid and children were impatient with extended development of the readiness activity to a given story. They indicated a preference to read to find out rather than spend time talking about the story.

Evaluation: Table 12 shows the instructional level of the two groups in April. At that time, 5.5 percent of the i.t.a. group had not completed formal transition. These children were instructionally placed in first to third i.t.a. readers. At the same time, a similar number (6.4 percent) of the t.o. group were found at the primer and first reader levels.

TABLE 12

Second Grade Instructional Levels of the i.t.a. and t.o.
Children as of April 15, 1965

	i.t.a. N=353	t.o. N=868
t.o. Reader Level	Percentage	Percentage
4-1	7.65	
3-2	18.70	
3-1	24.93	25.34
2-2	31.73	38.48
2-1	10.48	29.72
1st		6.22
Primer		.23
	——	
	94.49%	

i.t.a. Reader Level			
3 - 1	1.13	Total	100.00%
2 - 2	4.24		
2 - 1	.57		
Ist	.57		
	5.51%		
	100.00%		

It is noted further that 26 per cent of the i.t.a.-taught children are instructionally placed in 3^2 and 4^1 t.o. materials while none of the t.o. children are at these points.

During the last week of April, 1965, and in the month of May the *California Reading Test* and the *Stanford Achievement* spelling test were administered and a writing sample obtained. The results of the tests, *in traditional print,* presented in Table 13 were used to evaluate the reader level achievement of the i.t.a. group and to determine whether observations of increased spelling skill were correct.

TABLE 13

Means and Standard Deviations of the Reading and Spelling Achievement Scores of i.t.a. and t.o. Groups

April, 1965 Calif. Read. Test, Upper Primary	i.t.a. N=349		t.o. N=827		
	M	SD	M	SD	t
Vocabulary	36.4	7.50	34.8	7.95	.670
Comprehension	33.2	10.28	34.2	9.47	.374
May, 1965 Stanford Achievement, Primary II					
Spelling	16.9	8.04	13.8	7.80	2.56 #

# Significant at near the 1% level.

The data in Table 13 suggest that no differences in reading achievement exist between the i.t.a. and t.o. groups on the basis of scores earned on the subtests of the *California Reading Test* but that a difference in spelling achievement does exist. With respect to measured group achievement, the differences between obtained means on the reading subtests are not significant, but the difference between the obtained means on the spelling tests is significant almost at the 1 percent level of confidence. Thus advantage for the i.t.a.-taught children may be inferred with regard to spelling achievement but neither advantage nor disadvantage can be inferred for either group relative to reading skill. It was noted that a small portion of the i.t.a.-taught group had not yet completed transition at the time of the reading test, and that as much as 20 percent of the group had not had more than two months of reading activity in t.o. materials. While this factor may be influencing reading achievement results as reflected in standardized tests, the investigators attach strong importance to the fact that the i.t.a. group contained a larger proportion of pupils of the lower socio-economic category.

To reduce the influence of this factor on April reading achievement results, a sample was drawn from both i.t.a. and t.o. children, matched (within one point) on I.Q., socio-economic status, sex, chronological age. The data in Table 14 compare the samples.

TABLE 14

Means and Standard Deviations of the Matched Pairs on Reading and Spelling Achievement Scores in the Spring of 1965

April, 1965 Calif. Read. Test,	i.t.a. N=196		t.o. N=196		
Upper Primary	M	SD	M	SD	t
Vocabulary	37.19	6.78	35.04	7.92	3.30#
Comprehension	34.01	19.52	33.98	9.85	.04
May, 1965 Stanford Achievement, Primary II					
Spelling	17.85	7.41	13.85	8.04	5.81#

# Significant at the 1% level.

The data confirm the instructional observations and suggest that the difference in vocabulary skill between i.t.a.- and t.o.-taught children remains significant toward the end of the second grade year in favor of the former, that no difference in comprehension is demonstrated from a t.o.taught group, and that i.t.a.-taught children achieve higher scores on a test of ability to spell in t.o. than does a t.o.-taught group.

While clear-cut differences between the groups on standardizd spelling tests existed, it was thought that a restricted stimulus measure might provide additional data to evaluate observed differences in the writing behavior of the groups. Writing samples obtained in the second week of May were found to be available from 144 of the matched pairs. The data listed below in Table 15 suggest that some aspects of the writing behavior of t.o.- and i.t.a.-taught children can be quantified and statistically analyzed.

TABLE 15

Writing Sample Variables of the i.t.a. and t.o. Matched Pairs from the 1963-64 Children, Writing Sample obtained in May, 1965

	i.t.a. W=144		t.o. W=144		
	M.	S.D.	M.	S.D.	t
Punctuation	73.4	28.0	80.8	28.6	.64
Capitalization	74.0	25.6	84.7	21.9	3.60#
No. of Running Words	67.1	38.8	48.9	31.1	7.53#
Spelling	57.4	37.5	45.3	30.6	12.84#
No. of Polysyllabic Words	9.9	7.3	5.8	5.2	7.55#

# Significant at 1% level.

t.o.-taught children demonstrate a significantly higher score in capitalization but do not use punctuation significantly differently from the i.t.a.-taught children when measured on t.o. standards .However, the i.t.a-taught group's observed prolific and unrestrained writing behavior appears to be clearly reflected in the significantly higher scores this group achieves when the number of running words and the number of polysyllabic words used in stories are examined. Thus, it might be inferred that the i.t.a.-taught children, when writing in t.o. after transition from i.t.a., are not being inhibited by the t.o. medium and that freer and more extensive expression is generated in this population.

Spelling achievement in free writing is also found to be significantly different in favor of the i.t.a. children even though the t.o. standard is used as the only acceptable standard. While this evidence confirms the results of the *Stanford Spelling Achievement Test* reported earlier, it appears that this evidence is of a more significant nature in that regression to i.t.a. forms is not found as a characteristic when the child is asked to emphasize expression. A more natural test of a child's spelling ability, being that found in his daily writing behavior, the finding here seems to suggest that the factor of retroactive inhibition in learning is not as potent a factor at this point in school activity as might have been supposed.

Promotion Procedure: No departure from the promotion standards of the school district was found to be necessary at the end of the second grade. Overall ability as judged by the teacher in consultation with the curriculum consultants and his principal was used as the basis for promotion.

Preparation of the Third Grade Teachers: The fifteen third grade teachers assigned to receive the i.t.a.-taught children visited the classes during the spring semester to be acquainted with the level of skills and abilities of the children. Workshop activity to create an awareness of the experience that the i.t.a.-taught children had had was provided in June and September over a two-day period. The initial half-day in June consisted of an introduction to the rules for spelling with i.t.a. and training in writing the symbols. No unusual or different teacher behavior as compared to teacher behavior in prior years was noted.

One day of the September workshop period was used to touch on and eliminate problems in transcribing sounds. The remaining half-day session was devoted to:

1. the continuation of a functional approach to teaching spelling in which the child's phonetic encodings would gradually be eliminated and in which errors in compositions would serve as the focus for the spelling program;
2. the continuation of teaching the use of the dictionary, an emphasis on a study of prefix, suffix and roots in word study, and a review of word analysis skills emphasizing spelling patterns as related to the i.t.a. symbol-sound system;
3. a modification in the use of the basal readers to emphasize reading and thinking and study skills;

4. an emphasis on expanding the child's experiential horizon by a greater use of literature materials to supplement the basal program;
5. orientation in the development of the phonics and structural analysis as a function of the spelling program.

Program of Instruction: Teaching was paced to individual rates of learning as established earlier to permit an orderly development of writing and spelling skill post-transition.

The reading program was paced similarly and resumed at the point of instruction where the children had ended the school year.

Although 3^1, 3^2 and 4^1 materials were being used extensively in the earliest period of the third year, the reader a child completed was not considered to be of specific concern. Rather the teacher was encouraged to move children as naturally as possible through sequential activities while expanding his experience world using a study of literary forms, literature, wide use of the library, etc. Experimentation in the use of individualized reading, My Reading Design, and other devices was encouraged.

A continuation of the cursive writing program with an emphasis on trying various language development programs was established.

General Observations: Very little difficulty was experienced by third grade teachers in carrying on an instructional program now wholly in t.o. Supervisors reported difficulty, however, in moving the program away from traditional procedures and customs. Teachers appeared reluctant at times to try new procedures. At others, they appear to lack skill or be handicapped by a lack of clearly defined program goals. The tendency, therefore, was to rely on the materials (programs) available rather than embarking on self-developed courses of study. Guidance by supervisors and directors of the program, however, was followed. Some teachers followed general procedure of seeing "how far they could take the children" without exerting pressure to develop skills or abilities not well within their grasp. Others looked to available published materials to meet the learning appetites of children.

The major difficulty at this point, that of guides to the elements of the curriculum, was partially solved by emphasizing an expansion of the child's world through literature, but all evaluating members of the staff clearly felt the need to establish curricular goals, elements, and to seek out or write the materials needed to keep the pace of learning moving forward. The statement that "we may be neglecting opportunities," or that "we may be losing momentum," was expressed repeatedly. The implication was not that the child was in need of plateau activity but rather that the programs offered by publisher's materials were rather barren and that teachers needed concrete guides to keep the child challenged.

Evaluation:

The surveys of instructional levels of the i.t.a. and t.o. groups, made at various times during the year to assess whether a plateauing was occurring, were inconclusive. The survey on April 15th, 1966, as noted in Table 16 appears to suggest this effect but it must be remembered that teachers were encouraged to move into literary readers upon the completion of a basal reader before moving into higher graded materials.

TABLE 16

Third Grade Instructional Levels of the i.t.a. and t.o. Groups as of April 15, 1966

	i.t.a. N=332	t.o. N=949
t.o. Reader Level	Percentage	Percentage
5-1	3.91	2.42
4-2	9.94	4.11
4-1	25.90	23.29
3-2	27.71	29.42
3-1	25.00	29.12
2-2	7.53	10.14
2-1		1.47
1st		.01
	99.99%	99.98%

As noted in Table 16, a larger percentage of the t.o. group than the i.t.a. group was found to be instructionally placed in materials below grade level. This assumes that 3^1 is minimum expectancy for an April 15th point in the third grade year. A larger percentage (39.8 per cent) of the i.t.a. group is similarly found to be achieving above grade level when compared to the group (29.82 per cent). However, the data are recognized as somewhat ambiguous since no equivalency between the populations can be assumed.

Table 17, represents instructional level data from more equivalent samples. In this table only those children were included who had had kindergarten experience, who had not been repeaters in any grade, who had not been identified as having bilingual difficulties in first or second grade, or who had not transferred into the groups after the first grade year. However, socio-economic status is still a major factor in the lack of equivalence of the two groups.

TABLE 17

Third Grade Instructional Levels of the i.t.a. and t.o. Groups When Children Who Had Not Had Similar Backgrounds Were Removed

	i.t.a. N=243	t.o. N=589
t.o. Reader Level	Percentage	Percentage
5-1	4.1	2.5
4-2	11.9	5.6
4-1	31.3	29.7
3-2	26.7	29.7
3-1	21.4	23.6
2-2	4.5	8.0
2-1		.8
	99.9%	99.9%

It should be noted that the forty per cent drop in the t.o. group from 949 to 589 is greater than the twenty-seven per cent drop in the i.t.a. group from 332 to 243. The larger percent in the t.o. group reflects the fact that virtually all children transferring into the district were placed in t.o. classes where possible while over forty percent of the drop (89 children) in the i.t.a. group reflected the inclusion of the bilingual problem group in the initial study. The data, however, appear to confirm the previous finding of a higher reader level achievement by the i.t.a. sample.

During the last week of April, 1966, the *California Reading Test* and the *Stanford Achievement Spelling Test* were administered and a writing sample obtained. The results of the tests in traditional print, presented in Table 18 were used to evaluate the reader level achievement of the pupils and to determine whether observations of a maintenance of improved spelling skill were correct.

TABLE 18

Means, Standard Deviations of the Reading and Spelling Achievement Scores of the i.t.a. and t.o. Groups

April, 1966 California Reading Test	i.t.a. N=312		t.o. N=816		
Upper Primary, Form W	M.	S.D.	M.	S.D.	t
Vocabulary	41.1	4.27	40.5	4.63	.17
Comprehension	44.6	8.57	44.3	7.71	.08
Stanford Achievement Primary II, Form X					
Spelling	24.2	5.91	22.0	6.58	1.20

The data in Table 18 suggest that no differences in reading or spelling achievement exist between the i.t.a. and t.o. children with respect to measured group achievement. The lack of equivalency between the groups as described previously prohibits the drawing of inference except to note that the use of i.t.a. in a beginning reading and writing program appears to offer no handicap to achievement in later years.

Data on the matched pairs, selected earlier to reduce the influence of the factor of a major difference in socio-economic status between the groups, as reported in Table 19, compare the proportion of the selected samples of the i.t.a. and t.o. children. The data appear to confirm the instructional ob-

TABLE 19

Means, Standard Deviations of the Matched Samples on Reading and Spelling Achievement Scores

April, 1966 California Reading Test	i.t.a. N=128		t.o. N=128		
Upper Primary, Form X	M.	S.D.	M.	S.D.	t

Vocabulary	41.87	3.20	41.20	4.19	1.51
Comprehension	46.46	7.70	45.15	7.26	1.63
Stanford Achievement Primary II, Form X					
Spelling	25.63	7.14	21.30	8.09	4.36#

Significant at the 1% level.

servations and suggest that i.t.a. used in a beginning reading and writing program, has no deleterious effect on the reading achievement of a third grade pupil but has a positive effect on spelling achievement.

The observed and statistically significant difference in spelling on a t.o. standard noted at the end of the second grade is found to be maintained in the third grade year. The lack of a continued difference in vocabulary achievement from the second to the third grade year may be a reflection of those characteristics of the third grade program noted earlier, or that vocabulary skill, as measured by this standardized test, is not amenable to change beyond a second grade level. The view that word recognition skill catches up at some point, despite an earlier high success, may be valid. On the other hand, since no program adapted to the needs and abilities of i.t.a.-taught children was available for post-i.t.a. activity, it may be wholly incorrect to accept such a conclusion. The question can only be resolved by further study when such materials are available.

The contention that retroactive inhibition in learning to spell correctly, post-i.t.a. may be a major factor in limiting growth is not supported by the second and third grade spelling data.

The writing samples obtained at the time of standardized testing appear to confirm the instructional observation that writing skill is enhanced by an i.t.a. to t.o. procedure as noted earlier in Table 15 and as demonstrated in Table 20.

TABLE 20

Writing Sample Variables of the i.t.a. and t.o. Matched Pairs from the 1963-64 Groups, Writing Sample Obtained in April, 1966

	i.t.a. N=82		t.o. N=82		
	M.	S.D.	M.	S.D.	t
Punctuation	23.50	8.04	24.55	7.07	
Capitalization	16.45	10.98	17.83	9.75	
No. of Running Words	105.91	51.75	87.45	38.55	2.46#
No. of Polysyllabic Words	22.48	11.50	18.46	10.30	2.48#
Spelling	95.66	47.40	81.05	60.60	2.19#

Significant at the 5% level.

The prolific and free writing behavior noted throughout the two years that the i.t.a. group was studied appears to be maintained in the third year as suggested by the above results in a writing situation where creative expression was emphasized. A significant carry-over from spelling activities to writing activities does result.

Part II.

The 1964-65 First Grade Group

Introduction: Because it was predicated that the first year's activity would serve as a trial period during which problems in the use of i.t.a. for a beginning reading and writing program would be noted, and that subsequent groups would benefit from these findings, an evaluation of the activity of the first year was made as the first order of concern in the second year. Three considerations were reviewed:

1) Materials of Instruction: Owing to the relative dearth of printed i.t.a. supplementary material and the fact that the basic i.t.a. material was often unavailable at the time teachers needed it, a constraint of some magnitude was placed on the children's progress during the first year. Such constraints were not placed on the progress of t.o.-taught children because the wide variety of basal and supplementary materials were, of course, available to the traditional alphabet classes. The planned movement of two-thirds of the new first grade children into i.t.a. instruction was predicated on the minimization of such constraints since a number of supplementary i.t.a. materials became available during the spring and summer of 1964 and all of the basic material was published and readily available. Thus, the need to pace children's progress to the publication of basic material was eliminated in the replication. However, it must be noted that the wide variety of supplementary t.o. materials could not be matched.

2) Teacher Training: The procedures used in training teachers to use i.t.a. forms in transcribing sounds could be simplified and one-half day of instructional time eliminated through the use of classroom observations during the year and a change in the assignment following the first half day of instruction. The Dolch basic vocabulary list was selected as the basic transliteration assignment since it contained 52 percent of the total vocabulary used in typical first grade activities and half-day classroom visitations were scheduled during the spring semester for all new teachers.

3) Methodology: No specific change in methodology was found necessary since the teacher was free to select those courses of action necessary to meet the sense modes and rates of learning of her children. It was assumed that the measure of caution exhibited by first-grade i.t.a. teachers in working with children in an unfamiliar program would be lessened in the second year's activity since all teachers would have had the opportunity to note the ease children had in moving through sequential activities. Since the concern about transition also had been reduced, a greater degree of flexibility in the use of i.t.a. program could be encouraged.

Preparation of Teachers: The 15 new first grade teachers added in the phasing in process (from one-third of all classes the first year to two-thirds of all classes the second) received two days of orientation, which included one-half day of classroom visitation preceeding the orientation period.

Teachers in the t.o. classes were primarily selected based on their expressed interest in t.o. work. However, at least two teachers had expressed an interest in being included in the second i.t.a. experimental unit. To insure adequate control on the factor of teacher competency these were assigned to t.o. work.

As noted in Table 21, below, there was a similar range of professional training in both teacher groups. A few teachers in each group had only normal school certification, some had Bachelor's degrees, and others had earned Master's degrees. Both groups were similar in the number of years of teaching experience and in age. One teacher from each group resigned during the course of the year. The dates for leaving were very close (i.t.a. - March 1, 1965; t.o. - March 19, 1965). Both were replaced with competent substitutes. All teachers were female.

TABLE 21

Characteristics of Teachers of the i.t.a. and t.o. Classes

	I.T.A. N=31	T.O. N=15
	Mean	Mean
Age (in years)	41.6	40.8
Teaching experience (in years)	15.9	15.2

TEACHER TRAINING

In June, for one-half day, and in September, prior to the opening of school, one and one-half days of workshop instruction was provided for all teachers in separate workshops.

Those teachers who comprised the group using the Initial Teaching Alphabet were given review instruction in that they had all had one year's experience with that medium.

A portion of the workshop time was given to discussing those problems which had developed during the first year's demonstration and the ways in which they were solved or alleviated. As an example, during the first year the teachers using this augmented alphabet were continually faced with considerable inconvenience in waiting for materials to arrive from the publishers. Time itself solved this problem. A fairly extensive array of basic and supplementary materials was available.

The fifteen teachers of the Traditional Alphabet group were similarly informed of the procedures they were to use. The frequency of sound occurrence employed by the Initial Teaching Alphabet program was explained and sequence charts of the phoneme-grapheme correspondence utilizing this procedure were distributed.

Each workshop devoted a portion of time to learning the philosophy and fundamentals of a language arts approach to reading instruction. Teachers were encouraged to develop all the language skills in children: reading, writing, speaking, and listening. The importance and benefits of developing experience charts (for beginning reading activities) were described and demonstrations for using such charts were given.

Mimeograph materials were distribubted to all the teachers. These dealt with specific suggestions for initiating experience charts, topics for prompting creative writing, and lists of frequently used words.

In-Service Activities

Throughout the course of the entire year, instructional supervisors assigned to both groups visited each classroom. These observations were made with the intention of evaluating the children's progress, observing the techniques being used, noticing any weak spots and suggesting corrective measures, conferring with teachers on problems, and discussing the general operation of the program. As many visitations as possible were made each week, with at least one visitation per teacher, per week scheduled.

Once a month, for an hour after school, all teachers and instructional supervisors of each group met. These sessions enabled teachers to share ideas and to air current concerns. On several occasions, fellow teachers helped solve one another's problems because of recent similar experiences.

THE INSTRUCTIONAL PROGRAM

Since the methods used with both groups were comparable, being a basal reader approach with a language arts emphasis, the elements of the program described below apply to both groups. All of the elements followed the procedures as outlined in the teacher guides of the *Early-to-Read i.t.a. Series.*

The elements of the program included:

1. an experience approach for beginning reading instruction.
2. a basal reader nucleus program. Provision for differences within the group was made through the use of a second basal series. Thus more able i.t.a.-taught children used the *Early-to-Read* materials[1] while less able children used the *Downing Readers.*[2] More able t.o.

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[1] Published by i.t.a. Publications, Inc., 20 East 46th Street, New York City, 1963 and 1964 editions.

[2] Published by i.t.a. Publications, Inc., 20 East 46th Street, New York City, 1963 edition.

taught children used the *Alice and Jerry Readers*[1] (Row, Peterson materials) while less able children used the *ABC Language Arts Series*[2] (American Book Company materials). Supplementary or enrichment readers were available to each group: the *Jack and Janet*[3] (Nisbit materials) and *Reading for Meaning*[4] (Houghton-Mifflin materials.)

3. variety in workbook and supplementary skill activities as determined by pupil need.
4. meeting individual needs and rates of learning by grouping according to ability and progress. Special activities and techniques such as the following were included: kinesthetic-tactile word learning, sandbox practice, chalkboard tracing activities, skill building exercises, word card drill, and the use of clay strips in symbol and letter learning activities for further sensory involvement.
5. wide supplementary reading, which was encouraged by providing classroom book corners and insuring that library use was scheduled. Additional activities, including child-written story books, were provided.
6. writing activities which were structured to begin at the same time that symbols or letters were introduced. Thus, first day or first week activity emphasized the use of writing as an aid to the development of word learning and phonic skills. Spelling or encoding activities were structured on an informal basis as soon as vocabulary could be written using symbols or letters the child learned.
7. an eclectic word recognition program which followed the frequency of sound occurrence for phoneme-grapheme correspondence but included sight word and strutural analysis skill which followed the sequence from auditory perception to visual perception then kinesthetic learning.
8. writing activities which emphasized the phoneme-grapheme relationships according to the frequency of sound occurrence structured for word recognition activities.
9. guided purposeful reading activities which included readiness, silent and oral reading, word analysis, and comprehension skill teaching.

The following sequence chart shows the graphemes taught in the t.o. program according to the frequency of sound occurrence used in the i.t.a. program. Thus the short sound of *a* was taught simultaneously in each program, limited in each case by the teacher's classroom organization needs. The words in the t.o. columns are illustrative of the graphemes.

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[1] Published by Row, Peterson and Company, Evanston, Illinois, 1957 edition.

[2] Published by American Book Company, New York, 1958 edition.

[3] Published by James Nisbit and Company, Ltd., Digswell Place, Welwyn Herts, England.

[4] Published by Houghton-Mifflin, Boston, 1957 edition.

I.T.A. character		T.O. letter(s)	
a	appl	a	plant
n	nest	n	not
		gn	gnaw
		kn	kneel
t	tæbl	t	top
e	egg	e	get
		ea	head
b	bell	b	boy
s	santa	s	six
		c	city
r	rabbit	r	run
		wr	wreck
i	indian	i	hit
		y	funny
		ei	forfeit
d	dog	d	dime
l	lien	l	lost
th	fether	th	they
œ	bœt	o	go
		oe	toe
		ow	low
		ou	four
		oa	float
		ough	though
		or	for
		oor	floor
		z	rose
o	ostrich	o	hot
		a	want
		ough	cough
m	muŋky	m	me
c	cat	c	car
v	valentien	v	veil
p	pensil	p	pet
æ	ænjel	a	navy
		a-e	gave
		ay	day
		ai	paint
		ea	break
		ey	they
		ei	veil
		eigh	weigh

I.T.A. character		T.O. letter(s)	
ϵϵ	ϵϵgl	e	me
		ee	see
		ea	eat
		ey	key
		ei	ceiling
		ie	field
		i-e	machine
		e-e	mete
f	fiʃh	f	father
		ph	phone
		gh	laugh
w	wagon	w	wag
u	sun	u	bug
		ou	country
ω	bωt	o	do
		ou	you
		ew	grew
		ui	fruit
		oo	moon
		ough	through
ɹ	giɹl	ir	stir
		er	her
		ur	curl
		or	work
		ear	learn
ie	ies crϵϵm	i-e	ride
		y	my
		ie	pie
		igh	sigh
h	horse	h	home
k	kϵϵ	k	king
		qu	quit
		x	box
		ch	school
au	aut	aw	law
		au	fault
		a	ball
		ough	thought
ŋ	riŋ	ng	rang
ʃh	ʃhω	sh	sheep
		ch	chamois
		ti	imagination
		si	session
		ci	facial

I.T.A. character		T.O. letter(s)	
ω	bωk	u	full
		oo	look
g	gœt	g	green
y	yœ-yœ	y	yellow
ou	oul	ou	round
		ow	cow
		ough	bough
ch	chær	ch	church
ɑ	ɑrm	ar	far
j	jack-o-lantern	j	jump
th	thaŋksgiviŋ	th	throw
wh	whistl	wh	which
ue	uenieted stæts	u-e	mule
		u	music
		ew	new
		ui	suit
oi	boi	oi	join
		oy	toy
ʒ	televiʒion	dge	bridge
		si	television
z	zœbra	z	zoo

No attempt was made to teach children in the group using the traditional alphabet all of the many alternative sound spelling patterns. Teachers were instructed to introduce the most common patterns of a particular sound. They were encouraged to discuss and elaborate upon any of the others as the occasion demanded. Children's questions about or examples of the less common alternative spelling patterns were treated similarly.

Each teacher was provided with identical key word cards to insure that similar material and identical procedure for introducing sounds, a pictorial example, and the use of the grapheme in a word was being followed.

Control of Time Factors

The schedule shown below for first grade activities was used as the basis for a control of time spent on reading and related curriculum areas. A total of six hundred and fifty-five (655) minutes per week was provided for all language activities. One hundred and two (102) minutes per day, average, with five hundred and ten (510) minutes per week was provided for reading instruction alone.

TABLE 22

THE INSTRUCTIONAL WEEK SCHEDULE

Monday	Tuesday	Wednesday	Thursday	Friday
Opening Exercises and Planning				
9:00- 9:15	9:00- 9:15	9:00- 9:15	9:00- 9:15	9:00- 9:15
Reading				
9:15-10:15	9:15-10:15	9:15-10:15	9:15-10:15	9:15-10:15
Recess 10:15-10:30	Physical Ed. 10:15-10:45	Recess 10:15-10:30	Physical Ed. 10:15-10:45	Recess 10:15-10:30
Printing 10:30-10:45	Printing 10:45-11:00	Printing 10:30-10:45	Printing 10:45-11:00	Printing 10:30-10:45
Arithmetic				
10:45-11:15	11:00-11:30	10:45-11:15	11:00-11:30	10:45-11:15
Language 11:15-11:30		Health 11:15-11:30		Language 11:15-11:30
Music				
1:00- 1:20	1:00- 1:20	1:00- 1:20	1:00- 1:20	1:00- 1:20
Reading				
1:20- 1:50	1:20- 1:50	1:20- 2:05	1:20- 1:50	1:20- 1:50
Science 1:50- 2:10	Science 1:50- 2:10	Recess 2:05- 2:15*	Science 1:50- 2:10	Science 1:50- 2:10
Recess 2:10- 2:25	Recess 2:10- 2:20		Recess 2:10- 2:20	Recess 2:10- 2:25
Reading 2:25- 2:40	Reading 2:20- 2:35		Reading 2:20- 2:35	Reading 2:25- 2:40
Social Studies			Social Studies	
2:40- 3:00	2:35- 2:55	3:30	2:35- 2:55	2:40- 3:00
Art 3:00- 3:20	Language 2:55- 3:15		Language 2:55- 3:15	Art 3:00- 3:30
3:20- 3:30	3:15- 3:30		3:15- 3:30	

***Dismissal for Church School**

Supervisor observations, including time studies, plus teacher logs were used to check on adherence to the schedule provided. As noted in the schedule, 140 minutes was allotted on Thursday for all language activities. A log of teacher time on Thursday, March 11, 1965, as an example, indicates the close adherence teachers made to the allotment of time. t.o. teachers reported an average of 136 minutes spent that day on all language activities while the i.t.a. teachers reported using 142 minutes. Teachers' logs indicate variations from day to day but, in general, little variation between the i.t.a. and t.o. populations was noted. (Greater variation between teachers in either treatment group was noted, however.)

Hawthorne or Placebo Factors

Since it was assumed that a Hawthorne effect would operate in the i.t.a. teacher-child group because of the experimental implication of the new medium, attendant publicity, and/or parental discussions, deliberate attempts to control this factor were made. Visitors, some of whom were authorities in reading, were scheduled into the i.t.a. classes. In the case of the authority figures, these were given complete freedom to question the i.t.a. teachers. It was believed that such questioning would produce a degree of insecurity or anxiety and reduce enthusiasm induced by the use of an experimental medium. The expected effect occurred according to teacher reports and supervisory observations. It was also found that teachers repeated activities for late visitors, and that the visitors interfered with the teacher's normal schedule. Thus, some negative effects appeared to occur.

It was noted also that the children were aware of the experiment and of the experimental medium in their defense of the new alphabet in play and writing activities.

In the case of the second experimental unit, a Hawthorne effect was encouraged by emphasizing the experimental nature of the new procedures, by suggesting competition, though not openly inviting competition, and by scheduling visitors to examine the new procedures. The Hawthorne effect was found to be operating in that teachers reported "I am in competition," "I am not competing but having seen the achievement of the i.t.a. classes, I am trying to help my children do as well," to visitors and supervisors and colleagues.

The children at the same time were aware of the experiment in that t.o. children teased i.t.a.-taught children about their funny writing. They also seemed aware of their status as judged by their positive reaction to visitors.

PRE-TESTING DATA

Preliminary testing of the two groups (i.t.a. - c.a. 75.7; t.o. - c.a. 75.2; $t=0.11$) was made during the last two weeks of September, beginning September 17, 1965. The following battery of tests was administered by the classroom teachers who were given special training and who were supervised and assisted in their testing by administrative, supervisory, and project staff personnel.

1. *Pintner-Cunningham Primary Test* (Pintner General Ability Tests, Revised)
2. *California Short Form Test of Mental Maturity, 1957S*
3. *Durrell-Murphy Diagnostic Reading Readiness Test*
   a. Identification of Phonemes

   b. Capital Letter Names
   c. Lower-case Letter Names
   d. Learning Rate Test

4. *Thurstone Primary Mental Abilities Test*
   a. Pattern Copying
   b. Identical Forms

5. *Metropolitan Readiness Test*
   a. Word Meaning
   b. Listening Skill

6. *California Test of Personality*

Test Data, Problem I

Both the *California Test of Mental Maturity and Personality* were first scored by teachers and rescored and checked by members of the research staff. All of the other tests were scored and checked by trained research staff members. Since both the *California Test of Mental Maturity* and the *California Test of Personality* were used in matching in the previous study, these were again administered. As noted in Table 23, an attrition in the N of the groups has occurred since only those children who completed both tests were included in this initial study of mentality and adjustment. The groups appear to be well matched since no statistically significant differences between the means of the two groups are found. It can be inferred, however, that the t.o. group is slightly more able and better adjusted than the i.t.a. group and that the ability of the t.o. group is also less varied.

TABLE 23

California Test of Mental Maturity and *California Test of Personality*
Scores of the Experimental Groups

	i.t.a. N=917		t.o. N=462		
	M.	S.D.	M.	S.D.	t
California Test of Mental Maturity					
Non-Language I.Q.	102.0	18.20	106.6	16.02	0.58
Language I.Q.	105.4	13.22	104.4	14.50	0.09
Total I.Q.	102.9	15.18	105.7	12.62	0.38
California Test of Personality					
Personal Adjustment	29.8	22.57	32.3	20.40	0.87
Social Adjustment	27.1	22.53	31.1	21.34	1.49
Total Adjustment	28.4	21.04	32.0	18.85	1.30

Test Data, Problems II and III

Intermediate point testing of the population, planned for the mid-point of the instructional period, required the selection of random samples from each group. Samples of between 30 and 40 children were to be selected for this testing using a table of random numbers. Table 24 indicates intelligence levels of the samples selected and that the samples are not significantly different with regard to intelligence.

TABLE 24

Pintner-Cunningham I.Q. Scores of the Random Samples from Both Treatment Groups, N=35

	M.	S.D.	F test
i.t.a.	111.83	13.60	1.55
t.o.	110.77	16.93	

Test Data, Problems IV and V

Table 25, which reports the results of the remainder of the tests given but is based on only those members of the groups who completed all of the testing on May, indicates that the groups are similar as measured by all tests but three. The two significant differences on the subtests of the *Durrell-Murphy Readiness Test* may be accounted for by the emphasis in the t.o. instructional procedures on letter names in both upper and lower-case forms in the days which prceeded the administration of this test. Some seventeen days from the opening of school to the time of this testing had elapsed and instruction in reading and writing proceeded on days when no testing was scheduled as well as during the earliest days of getting the classroom organized. However, the significant difference in the intelligence of the two groups precludes a meaningful comparison of the achievement.

TABLE 25

Additional Preliminary Test Data on the i.t.a. and t.o. Groups

	i.t.a. N=689		t.o. N=351		
	Mean	S.D.	Mean	S.D.	t
Pintner-Cunningham I.Q.	108.33	1715	110.62	14.7	2.02#
Durrell-Murphy Readiness Test					
Phonemes	32.0	13.46	31.8	13.34	0.08
Capital Letter Names	16.6	7.08	20.0	6.34	2.31#
Lower-case Letter Names	12.0	6.32	16.9	6.49	3.22##
Learning Rate Test	11.7	3.73	12.4	3.47	0.71

Thurstone Primary Mental Abilities Test					
Pattern Copying	16.5	8.52	17.7	8.31	0.81
Identical Forms	15.4	5.40	15.2	4.99	0.14
Metropolitan Readiness Test					
Word Meaning	8.4	2.98	9.7	4.35	1.80
Listening Skill	8.9	2.42	9.3	4.16	0.55

# significant at the 5 per cent level.
## significant at the 1 per cent level.

Atttrition in the N of the samples is again noted when only those completing all of the tests were studied.

An investigation of possible causes of this variation indicated the following characteristics may be partially responsible:

TABLE 26

Pupil Characteristics Which Suggest Causative Factors For Inadequate Matching

	i.t.a. N=689	t.o. N=351
Repeaters in each group	10.3%#	9.0%#
Bilingual children or children speaking little English	4.2%	1.5%
Socio-economic status as reflected in family income below $3500.00	40.1%	28.7%

#Most of the repeaters from each group had been previously subjected to the treatment (i.t.a. or t.o.) in which they are now found.

A meaningful comparison of the two groups at the end of the year was precluded by the results of this study of the matching of the children. To eliminate the effect of differences noted in the groups, 164 pairs were selected, matched on I.Q., sex, and socio-economic status. Matching of the groups was completed only after children who had not had one year of kindergarten experience, who were repeaters, or who had bilingual problems were excluded from consideration. Thus the pairs were selected from children who each had one year of kindergarten experience, had no previous instructional experience in first grade, were not limited by bilingual difficulties, and were matched on sex, I.Q., and socio-economic status. Mean I.Q. of the 164 matched pairs: 114.9. Of the matched pairs, only 118 pairs completed all the final tests and thus this number was used in the year-end analyses. Mean I.Q. of the 118 matched pairs: 115.09, S.D. 11.0. Sixty-three girl pairs and fifty-five boy pairs were included in the 118 matched pairs.

General Observations: While new teachers to the i.t.a. group exhibited some anxiety in the earliest weeks concerning the use of i.t.a. in writing activities, this anxiety was sharply less than noted with the pioneer teacher group. Progress in teaching the symbol-sound associations was noted as more rapid than in the first year. This was attributed to the teacher's recognition that teaching a given symbol to mastery was not necessary if enough repetitious experience in i.t.a. use was provided to achieve a working mastery over a period of time.

Additional data, comparing the t.o. subjects with the i.t.a. subjects whose teachers were experienced in i.t.a., obtained under funding by the U. S. Office of Education to provide data for use in the national study of first grade reading programs, are summarized from that major report.

1. *Is there a difference in reading achievement in the tenth week of school as reflected in instructional level achievements when the same method is used but the medium (traditional orthography or initial teaching alphabet) is different?*

As may be seen from Table 27, progress in reading of the i.t.a. and t.o. children, as indicated by instructional level achievements at the tenth week, appears to be significantly different. Assuming that instructional level achievements are reliable, it would appear that many of the i.t.a. children (over forty per cent) are achieving reading status at an earlier point than was found possible by the children under the t.o. treatment.

TABLE 27

Tenth-Week Instructional Level Achievements of the i.t.a. and t.o. Children

	i.t.a. N=417		t.o. N=402	
Instructional Levels	Number	Percentage	Number	Percentage
Below Primer	219	52.5	288	96.6
Primer	183	43.9	13	3.2
First	11	2.6	1	.2
Second	4	1.0		

Evaluation: After ten weeks of instruction, a survey of instruction levels produced the data reported in Table 28. The data indicate that some 40 percent of the i.t.a. children were reading at primer or above levels as compared with 3 percent of the t.o. children. Since i.t.a. books 1A and 1B have significantly higher readabilities and higher vocabularies than the 1st through 4th preprimers in t.o., a meaningful comparison of achievement at this level is not possible. However, the distributions of the reader levels indicate relatively rapid progress of the t.o. children in this short period and a marked difference in the numbers achieving primer status in favor of the i.t.a. children.

TABLE 28

Instructional Level Achievement at the Tenth Week Mark of the 1964-65 First Grade Children — November, 1964

	i.t.a N=913 Number	 Percentage	t.o. N=462 Number	 Percentage	
Book 1A .... or below	178	19.4%	78	16.9%	1st PP or below
Book 1B	366	40.1%	181	39.2%	2nd PP
....			167	36.1%	3rd PP
....			22	4.8%	4th PP
Book 2 .... (Primer)	354	38.8%	13	2.8%	Primer
Book 3 .... (1st Reader)	11	1.2%	1	.2%	1st Reader
Book 4 (2^1).......	4	.4%			2nd Reader (2^1)
		99.9%		100.0%	

Table 29 compares the achievement of the first and second i.t.a. children at the same point. The data suggest a marked difference in the progress of the two groups. This difference appears to be accounted for by teacher familiarity with i.t.a. as a medium and less cautious behavior in using i.t.a. materials.

TABLE 29

Instructional Levels Achievement at the 10th Week Point of the 1963-64 and 1964-65 First Grade i.t.a. Children

	i.t.a. 1963-64 N=454 percentage	i.t.a. 1964-65 N=913 percentage
Below Book 2..............	89.9%	59.5%
Book 2	10.1%	38.2%
Book 3		1.2%
Book 4		.4%

2. *Is there a difference in reading achievement of the i.t.a. and t.o. sample in the fifth month of school when the same method is used but the medium is different?*

Intermediate-point test results of the random samples of each group during the first week of February on two measures are reported in Tables 30 and 31. Instructional achivement levels of the random samples as measured by the Botel Reading Inventory (each group tested on identical material but the print medium—i.t.a. or t.o.—different to reflect the different media used in instruction) indicate that the median achievement of the i.t.a. children is the first reader level, while the t.o. median achievement is the PP reading level. Almost 43 percent of the i.t.a. pupils are found at instructional levels from 2-1 to fourth reader, as compared with 3 percent of the t.o. pupils.

TABLE 30

Instructional Levels of Random Samples as Measured by Botel Reading Inventory Printed in Medium Used by Each.

Reader Level	Percentage Achieving i.t.a. N=35	Percentage Achieving t.o. N=35
4	5.7	2.9
3-2	14.3	
3-1	11.4	
2-2	2.9	
2-1	8.6	
1	17.1	
P	8.6	17.1
PP	5.7	42.8
Readiness	25.7	37.1

The distribution of instructional level achievements of the i.t.a. children above the median suggests that individual differences in intelligence are being reflected in the achievement on an i.t.a. form of this test. The gap between the first reader and fourth reader achievement of the t.o. children suggests that traditional orthography at this point in the school year has an inhibiting effect on achievement, which only a small percentage of the brightest children can overcome.

Table 31 shows the achievements of the i.t.a. and t.o. children on subtests from the *Stanford Achievement Test,* Form W, given in first grade in the first weeks of February.

TABLE 31

Stanford Achievement Test, Form W, Raw Scores for Random Samples (Each Tested in its Medium)

Subtests	i.t.a. (N=35) M.	i.t.a. (N=35) S.D.	t.o. (N=35) M.	t.o. (N=35) S.D.	t
Word Reading	24.7	8.25	13.1	7.03	2.27#
Paragraph Meaning	10.9	9.57	10.0	8.00	0.27
Vocabulary	17.9	7.11	17.3	7.30	1.30
Word Study Skills	39.6	10.33	30.3	9.11	1.09

# Significant at the 5 % level.

Mean differences in achievement in favor of the i.t.a. children exist on all subtests, but these differences are significant at the 5 per cent level only on the subtest of Word Reading. Thus, advantage for the children instructed in i.t.a. may be inferred with confidence only on the test of Word Reading when the children are tested on material printed in the media used in instruction. The mean difference on the subtest of Word

Study Skills, while not significant, suggests that the i.t.a. children are somewhat more proficient in applying word study skills. The lack of significant differences on the subtest of Paragraph Meaning and Vocabulary suggest that these measures may be highly related, and may be a reflection of the influence of intelligence on this kind of achievement.

Instructional level achievement in the eighth month of school reported in Table 32 indicates that some 64 percent of the i.t.a. group were instructionally placed in 2-2 or higher materials (2.8 readability) as compared with less than one percent of the t.o. group. The low point achievement of 9.5 percent of the i.t.a. group and 19.9 percent of the t.o. group at the Primer level suggest that less able children achieve higher reading skill in i.t.a. materials than was possible using similar procedures in the t.o. medium.

TABLE 32

Instructional Level Achievement of the 1964-65 First Grade Group in April, 1965

Reader Level	Proportion of i.t.a N=926	Proportion of t.o. N=453
3-1 T.O.	32.18	
3-1 (i/t/a Book 6)	15.44	
2-2 (i/t/a Book 5)	17.17	.66
2-1 (i/t/a Book 4)	21.38	26.05
1 (i/t/a Book 3)	4.32	53.42
P (i/t/a Book 2)	5.94	14.57
PP and below	3.56	5.30

Table 33 compares the achievement of the first and second year i.t.a. children at the same point. These data indicate more rapid progress in instructional level achievement by the second year group.

TABLE 33

Instructional Level Achievement in April of the 1963-64 and 1964-65 First Grade Children

Reader Level	Proportion of i.t.a. 1963-64 April 15 N=451	Proportion of i.t.a. 1964-65 April 15 N=923
Third - T.O.		32.18
Third - i/t/a	24.0	15.44
Second - i/t/a	50.7	38.55
First - i/t/a	14.0	4.32
Primer or below - i/t/a	11.3	9.50

As noted in Table 33, over 32 percent of the 1964-65 children had made formal transition by April 15 while none of last year's children had done so. A marked difference in the number of children achieving first reader or lower instructional levels is also indicated, though relatively little change is indicated at the lowest level.

Informal transition from i.t.a. to t.o. again was made by able learners in November and December as they were introduced to books at home or selected them on visits to the school libraries. Formal instruction in transition based on the traditional spelling curriculum was begun in late February with small segments of the group. While only 32 percent of the children had made formal transition by April 15, teacher reports indicated that about 65 percent of the children had made transition by May 15th and that by the close of school, it was expected that 82 percent would have made formal transition.

During the middle two weeks of May, the *California Reading Test* and the *Stanford Spelling Test* were administered to all first grade children of the Bethlehem Area Joint Schools to chcek on observed differencs in measured progress. All children, including those who were in i.t.a. classes and who had not made transition to traditional print, were tested in the traditional alphabet. Data obtained from the administration of these tests were used to answer the following questions.

3. *Is there a difference in reading and spelling achievement on a t.o. standard at the end of 140 days of instruction between the i.t.a. and t.o. groups when methodology is controlled but media differ?*

The data in Table 34 were obtained to answer this question. Since the major groups were significantly different, matched pairs (matched on IQ, sex, and number of years of school experience, bilingual children excluded) were selected to eliminate these variations from the groups.

Of the 164 matched pairs selected at the beginning of the year, only 118 completed the testing at the end of the year. Table 34 shows the data from the Stanford Achievement Test on the 118 matched pairs (mean IQ, 115.9).

TABLE 34

Means, Standard Deviations and z Test Scores of the Matched Pairs on the t.o. Form of the *Stanford Achievement Test, Form X*

	i.t.a. N=118*		t.o. N=118		
Stanford Achievement, Primary I, Form X	M	S.D.	M.	S.D.	t
Word Reading	25.33	6.45	23.47	6.50	2.37#
Paragraph Meaning	23.81	9.64	23.42	8.93	0.35
Word Study	23.08	5.38	24.30	5.99	-1.95#
Spelling	10.25	4.21	14.92	8.95	-7.64#
Vocabulary	41.14	7.85	41.89	8.95	-0.92

Significant at or near the 5% level.

Significant at the 1% level. (Negative t test scores indicate difference is in favor of the t.o. children).

The data can be interpreted as indicating that advantage is seen for i.t.a.-taught children on a t.o. measure of word reading, even though only 54 percent of the i.t.a. children had made transition to t.o., but that significantly lower skill in spelling is achieved. Further, no significant differences between i.t.a. and t.o.-taught children are found in Paragraph Meaning and Word Study skills subtests when measured on the t.o. standard.

Questionnaires distributed to samples of parents and teachers of both i.t.a. and t.o.-taught children were analyzed to determine whether differences existed on a variety of items. The findings are summarized below:

1. As judged by their parents, there were no statistical differences between the two groups of children in respect to their liking for school, liking to read at home and school, and in the amount of time they spent in reading at home.

2. According to the responses of parents, children in the i.t.a. group asked someone to read to them less often than did children in the t.o. group, ($p<.05$). It appears that children in the i.t.a. group were able to read independently sooner than children who were in the t.o. program; consequently, they asked to be read to less often. This finding is supported by the levels of reading ability achieved at the 10th week and 5th month periods.

3. As estimated by parents, children in the i.t.a. group took library or reading books from school significantly more often than did children in the t.o. group, ($p<.005$).

4. There were significantly more parents who said they were pleased that their children would be taught to read with i.t.a. than parents who said they were pleased their children would be taught to read with t.o. ($p<.005$).

5. According to estimates made by teachers, a greater proportion of children in the i.t.a. classes chose to read more often in their free time than did children in the t.o. classes.

Second Year Results of the 1964-65 Group

As noted earlier (page 24), a guideline for promotion procedure was established as an assessment of the benefit to the child that might be garnered by a second year of first grade experience, especially with regard to promoting security and improving competence. This was found to be a more adequate basis than others previously tried.

Preparation of Second Grade Teachers: No deviation from the procedures reported earlier were found to be necessary. Difficulties encountered were typically those of teacher adjustment to the higher reading level achievements of the i.t.a. group and the advanced level of writing ability. The use of a specific cursive writing system was introduced with all second grades in February and publisher conducted workshops were established to add this element to the curriculum. No specific need for such a program, nor for timing the introduction of cursive writing was found. The decision to add a specific penmanship program was made primarily to provide a structured program for teachers to follow.

Program of Instruction: The curriculum was paced to individual rates of learning so that transition from i.t.a. to t.o. materials followed the developmental sequence. The movement of larger segments of the 1964-65 first grade group into higher reader levels was found to have accelerated the need for curriculum reform at the second grade level with implications for reform in subsequent years. Teachers were encouraged to depart from the basal reader program when children began to read or complete the 4^1 level materials. A movement into literary materials, to the use of such individualized reading procedures as *My Reading Design* or to other individualized reading procedurse was encouraged to eliminate the necessity for moving constantly to higher reader levels. The opportunity to expand the child's reading experience horizontally, to provide the beginnings of a strong literature background, was deemed more important than teaching for test achievement or achieving a specific reader level status.

Evaluation: A survey of instructional levels of the i.t.a. and t.o. 1964-65 group in its second year was made periodically to assess growth and progress. The survey of April 15th reported in Table 35 indicates that 13.3 percent of the i.t.a. children achieved fourth reader instructional level status as compared to 2.1 percent of the t.o. children. It is also seen that fewer i.t.a.-taught children are reading below the desirable instructional level of 2.2 than those taught in t.o. It appears that i.t.a. has a significant effect on the instructional level achievement of the portion of the children for whom a serious concern has existed. As expected, a small portion of the i.t.a. group (2.5 percent) is moving at their rates of learning toward transition.

TABLE 35

Second Grade Instructional Levels of the i.t.a. and t.o. 1964-65 Groups at the April 15th Point. No Equivalency Between the Groups Suggested.

Instructional Level	i.t.a. N=794 Percentage	t.o. N=471 Percentage
4^2	2.5	
4^1	10.8	2.1
3^2	23.2	14.2
3^1	25.7	22.2
2^2	26.1	39.1
2^1	9.0	21.8
1^2	.2	.2
1^1		.4
	97.5%	100.0%
i/t/a Book 6........(3^1)	1.5	
i/t/a Book 5........(2^2)	.7	
i/t/a Book 4........(2^1)	.1	
i/t/a Book 3........(1^2)	.2	
	2.5%	
TOTAL	100.0%	

As previously noted, the i.t.a. sample was negatively loaded by inclusion of a larger number of less able children according to IQ test scores; therefore, data from the matched pair samples are especially interesting. The data in Table 36 indicate a small increase in the percentage achieving fourth reader level status, and a decrease in the percentage achieving below the desirable 2^2 level for both groups. However, the number achieving at a higher point is greater for the i.t.a. sample while the number of children achieving at a 2^1 level and below is greater for the t.o. group.

TABLE 36

Instructional Level Achievements of Matched Samples of the i.t.a. and t.o. Children from the April 15, 1966, Survey

Instructional Level Achievement	i.t.a. N=101 Percentage	t.o. N=101 Percentage
4^2	2.0	
4^1	13.9	5.9
3^2	24.7	21.8
3^1	29.7	39.7
2^2	24.7	17.8
2^1	4.0	14.9
	99.0%	
i/t/a Book 5.................(2^2)	1.0%	
	100.0%	100.0%

During the month of May, the *Stanford Achievement Test* was administered and a writing sample obtained to evaluate classroom performance in reading and writing. The results of the language subtests for the unequivalent groups on the *Stanford* are reported in Table 37. The results appear to differ little from those achieved in prior groups in terms of a lack of statistically significant differences. It should be noted however that the 1963-64 group was tested consistently on the *California Reading Test* while the 1964-65 group was tested consistently on the *Stanford*. Of the two tests, the *Stanford* appears more clearly based on the curriculum of a few basal readers and may be more positively weighed toward the t.o. basal-taught group. The small standard deviation noted in the t.o. group on the subtests of Word and Paragraph Meaning and Spelling suggests a more uniform level of achievement.

TABLE 37

Stanford Achievement Subtest Results in the i.t.a. and t.o. 1964-65 Group in Second Grade, May, 1966

	i.t.a. N=781		t.o. N=465		
	M.	S.D.	M.	S.D.	t
Word Meaning	21.09	7.22	19.49	3.51	.4083
Paragraph Meaning	31.60	12.24	31.52	3.48	.0768
Word Study Skills	42.29	11.99	40.49	10.49	-.0527
Language Skills	38.51	9.82	38.99	7.99	.0105
Spelling	17.21	8.52	14.98	1.01	.0940

The comparison of the matched samples as reported in Table 38 indicates significant differences in favor of the i.t.a.-taught group on the subtests of Spelling and Language Skills but no significant differences between the groups on the remaining subtests.

TABLE 38

Matched Sample Results on Subtests of the *Stanford Achievement Test*, of the 1964-65 Group, Tested in May, 1966

	i.t.a N=68		t.o. N=68		
	M.	S.D.	M.	S.D.	t
Word Reading	22.67	6.72	21.26	4.68	1.64
Paragraph Reading	33.32	10.40	35.26	8.15	-1.44
Word Study Skills	45.00	11.00	45.29	12.00	-0.74
Spelling	19.18	6.51	17.37	8.16	1.95#
Language Skills	41.94	8.00	39.49	9.36	2.09#

# Significant at or near the 5% level.

Writing sample results available from 68 of the matched pairs reported in Table 39 indicated significant differences in favor of the i.t.a. group in the number of running words and the number of polysyllabic words used.

TABLE 39

1964-65 Matched Sample Writing Results
Sample Obtained in May, 1966

	i.t.a. N=68		t.o. N=68		
	M.	S.D.	M.	S.D.	t
No. of Polysyllable Words	18.87	10.00	15.46	10.28	2.23#
Correctly Spelled Words	67.32	44.00	57.97	36.60	1.48
No. of Running Words	81.54	45.75	67.79	37.50	2.03#

# Significant at the 5% level.

While no significant difference between the samples exists on the number of correctly spelled words, a large mean difference occurs and favors the i.t.a. group.

A random sample of each group, recognizing the lack of socio-economic equivalency, was taken to permit a study of differences between the samples on additional measures of reading skills. The results, reported in Table 40, suggest that the i.t.a. sample achieves significantly higher scores on a test of word recognition which is presumed to be composed of phonetically regular words but does not differ significantly on the other measures. Thus, no negative behaviors result from the use of i.t.a. procedure while some positive findings appear.

TABLE 40

Reading Test Results on the Random Samples from the 1964-65 i.t.a. and t.o. Groups

	i.t.a. N=33		t.o. N=33		
	M.	S.D.	M.	S.D.	t
Word Recognition (Fry List, Phonetically Regular)	36.06	1.50	29.05	13.30	2.49#
Word Recognition (Gates List)	10.17	4.44	8.00	5.42	1.71
Gilmore Rate of Reading	93.29	30.45	94.91	28.35	-.26
Gilmore Accuracy	45.56	16.74	43.35	12.95	.58

# Significant at the 5% level.

Part III.

The Final Year. Questions and Answers

Beginning with the school year 1965-66, all first grade children in the Bethlehem School District used i.t.a. as their medium for initial reading and writing instruction. Over 1400 first grade children in this year were instructed by teachers who had previously been taught i.t.a. procedures in workshop activities as established earlier. No modification of procedure for such workshop activity was found necessary.

Progress of the last of the three groups to be studied in the period of this report was found to differ in no significant way from the progress of the earlier groups. After two years of activity, procedures for material procurement and distribution had been established on a routine basis, and no new problems emerged.

A study of the value of an ungraded concept on teacher attitude was begun in this period. In this study the teacher who began teaching a first grade class retained her class for a second year. Reports from the teacher indicated that the second year's activity was highly rewarding to her in that she was able to observe the complete transition process and, knowing her children well, was able to provide more specific needs instruction than previously found possible.

The data obtained on first, second and third grade progress in i.t.a. suggest that the methodological applications of i.t.a. were empirically defensible and some indication of the progress which can be expected in a typical population was shown. Effective reading in i.t.a. was seen to develop easily and contrasts with more limited reader level achievement in t.o. A positive effect on the teacher's ability to meet the needs of children unhampered by the complexity of t.o., and on her ability to integrate the language arts into a meaningful whole, has been observed. The child's relatively prolific writing skill in an i.t.a. medium and his enhanced spelling skill post-i.t.a. tends to moderate a concern that the child's spelling might be negatively affected and indicates another possible value in the use of an i.t.a. to t.o. approach to reading and writing instruction. Assuming then that a school system decides to utilize i.t.a. as the basic program of instruction the following questions might reasonably be asked:

1. How can the new medium and its inherent methodology be introduced into a school's program?
2. What problems exist in phasing in the new program and how might these be solved?
3. What curriculum changes are necessary to meet the needs of children whose reading skill has been modified?

4. What implications are found for a modification of existing methods of training teachers for reading instruction?

Based on the three-year experience with i.t.a. in the Bethlehem Area Schools, with more than 600 teachers, supervisors and college instructors in Lehigh University workshops, with numerous teachers in various parts of the country, and on information supplied by observers across the country, information in response to the above questions is given below.

A. *How can the new medium and its inherent methodology be introduced into a school's program?*

Once a decision to use i.t.a. is made, the introduction of a program which utilizes i.t.a. into a school system becomes an essentially simple process. There are three areas which need consideration and these are identical to those found when introducing any new program:

1. Budgeting
2. Teacher Training
3. Public Relations

1. Budgeting for the new program must give consideration to the cost of both basic materials and supplementary materials. Initial per pupil cost for all basic material is $12.00; however, the average per pupil cost for schools beginning i.t.a. instruction has been $8.00. Since the readers are reusable, workbook replacement costs in subsequent years and normal replacement of books follows. Appropriate supplementary pupil materials may be budgeted at one to two dollars. A teacher's complete set of basic materials is listed at $27.00. Supplementary library materials may be as plentiful as the school's budget permits. It is noted, though, that a set of forty-five supplementary titles to accompany the basic materials and a collection of forty paperback titles can be obtained at a cost of $60. This provides an ample supplementary beginning classroom library. Thus, one class of 30 pupils may be fully equipped at a cost of $325.00 to $400.00, depending on whether optional materials are provided.

A higher allocation for writing paper should be made because the use of writing paper in the first grade quadruples, but no other unusual costs have been noted.

Budgetary consideration and/or public acceptance (see below) are the principal factors which may limit the rapidity with which an i.t.a. program can be phased into a school's curriculum. Any portion of a population can be begun in i.t.a. without negative effects on the children or the school program. The most typical patterns of incorporation have been seen as:

a. One-third of all first grade classes each year for three years in moderate-sized districts,
b. One or two classes as pilot classes in small districts with subsequent movement to one-third, one-half, or all classes, and
c. wholesale adoption without prior trial.

Of these typical procedures, in any combination, only the last was found to be somewhat unsatisfactory. In one case, inadequate staff-preparation was noted as the cause for dissatisfaction.

2. Various approaches to training teachers exist. A school may elect any one of the solutions listed below and be assured of satisfactory results.

   a. Formal publisher promoted workshop—Rating: Good to excellent
   b. University Faculty conducted workshop—Rating: Excellent
   c. A teacher and supervisor trained at a University who serve as a nucleus to conduct local training—Rating: Excellent
   d. Self-study by local faculty—Rating: Satisfactory to excellent, depending on teacher interest and local leadership
   e. Informal "local" publisher workshop—Satisfactory to excellent, depending on the individual publishers' representative
   f. Consultant-conducted local workshop—Excellent

As noted in the current report, no more than two full days of workshop are necessary to master the essential elements in the use of i.t.a. for beginning reading and writing. Since the teacher needs to learn to write only 21 symbols and to transcribe sound based on eight rules, six of which follow from the traditional spelling system, the procedures involved need not be prolonged. A day and a third are usually devoted to this aspect of the training program. The remaining time is usually devoted to:

   a. film demonstrations of teaching procedures which reassure the teacher that no changes in methodology are expected as well as to provide additional ideas for trial use,
   b. writing samples designed to show how writing progresses and the kinds of errors a teacher would correct,
   c. a review of the use of the language-experience approach to reading instruction,
   d. responses to questions concerning how to deal with other areas of the curriculum, and
   e. a discussion of the procedures to be used with the basic material selected.

3. As with any new program, education of the public and staff to the use of i.t.a. for beginning reading and writing must be planned. Dissemination of information on i.t.a. use, while widespread in national magazines, does not guarantee that parents or educators have necessarily become informed. Much misinformation about the program has been noted among lay people and educators. Orientation programs similar to the following could be used at P.T.A. meetings, the specially called meetings of kindergarten parents, at school board meetings, or in public forums.

   a. The use of the film "The 40 Sounds of English" and discussion of questions prompted by the film.
   b. A discussion of the variety of English spellings, their effect on the the reading and writing programs, and the use of i.t.a. to simplify the learner's problems.

c. The use of the film "A Book is to Read" to promote questions for discussion.

d. Distribution of the pamphlet *A Parent's Guide to i/t/a,*[1] followed by a discussion of problems parents may have in understanding i.t.a. use.

Literature describing i.t.a., its use and purposes, readily obtainable from reputable publishers and the *i.t.a. foundation,* have been used to advantage in newspaper and local radio releases.

B. *What problems exist in phasing in the new program and how might these be solved?*

Based on the experience thus far, the use of i.t.a. for a beginning reading and writing program creates few problems and in itself, as presently structured for use, contains few problems. However, a wide variety of questions are asked about the use of i.t.a. These reflect concerns about various procedures which are repeatedly noted in workshops. Such concerns, as will be noted in the responses below reflect misconceptions which popular and professional magazine articles have not corrected.

1. *The Alphabet:* i.t.a. is not a program in itself; it is an alphabet. As such, it demands nothing new in methodology of instruction. However, no alphabet is useful until an orthography is structured to encode the sounds of a language. As noted in the case of i.t.a., eight rules comprise the basic guidelines teachers use to encode sound so that word patterns approximate those of traditional orthography. Since a number of alternative word patterns are available in the use of i.t.a. and its rules, the choice of a pattern indicated by Pitman is generally the one which is most like the pattern of t.o.

In the shift from a single principle of encoding of sound to the construction of an orthography which approximates the traditional, i.t.a. becomes a program of spelling words which have transitional values. The classification of i.t.a. in its orthographic sense as a medium designed to be less than perfect, suggests that any use of i.t.a. regardless of publisher's or author's structure, provides a spelling program which 1) allows the child complete freedom to encode sound, 2) limits the teacher's freedom by a set of rules to approximate the print forms found in books, and 3) demands a consistency from authors and publishers which is predicated on a variety of rules to insure that word forms have transitional values.

The i.t.a. on examination is noted as redundant, containing 44 characters for the 40 sounds of English, and, in the sense of correspondence of sound to symbol, is 91 to 100 percent phonetic. Since several letters correspond to the same sound values (C and K; for example), a degree of ambiguity is reflected in the alphabet from the beginner's viewpoint. Further ambiguities result from the use of *y* as both consonant and vowel, the rules of spelling, the need to choose alternatives in word forms for transitional values, and conventions in spelling words such as been, and words ending in *age.* The resultant orthography is imperfect in a phonetic sense. However, the reduction of ambiguity in sound-symbol correspondence is the major factor which accounts for the ease of development of beginning reading and writing while its imperfections are in agreement with research which describes the need for establishing for the learner a readiness to accept the inconsistencies of the traditional alphabet.

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[1] Ka-em Associates, Inc., Berkeley Heights, N. J.

2. *Published Programs Using the i.t.a.:* While several programs utilizing i.t.a. exist, i.t.a. of itself does not demand that a particular structure be used for the reading program. No rule of prohibition or inhibition as yet has been discovered in the use of i.t.a as the introductory medium to the complex notational system. Thus an author's program may be based 1) on his philosophy of educating the child, 2) on assumptions concerning the way children learn best, 3) on studies of learning and research in reading and writing. Programs, therefore, may be found which range from the transliteration of basal materials in fashion in prior years, through duplication of the controlled vocabulary of basal readers with some attempt to include current events, through anthologies of stories in which vocabulary controls are minimal.

The construction of a reading program which utilizes the i.t.a. to maximum advantage therefore may be limited by publisher's economic needs or an author's philosophical views but i.t.a. places no constraint on either. While the vocabulary and interest content of a reading program is not limited by i.t.a., the word analysis skills program is always a reflection of the structure of the orthography based on i.t.a., but again no particular organization of the program is demanded.

Prior to the publication of the *Early to Read—i.t.a. program,* no material concerning the possible nature of a transitional program existed. Transitional activities in the English experience were based on trial and error, and were the responsibility of the teacher. Again, while no specific transition program was demanded in the use of i.t.a. for reading purposes, no rule of prohibition was found either. The program of transition an author could develop may range from 1) a movement directly into t.o. at the same reader level of the last of the i.t.a. readers, 2) through a repeated use of the last i.t.a. book in t.o., 3) an undercutting of readability and the use of a controlled vocabulary, 4) through a transitional phasing out of i.t.a. while t.o. spelling are increasingly utilized. Of the four transition programs noted, only the first, second, and fourth have been tried and found valid thus far. As noted in the use of i.t.a. with the Bethlehem population, no one of the procedures appears to be better than another and, in fact the freedom to use any or all of the procedures with particular children seems most desirable.

The spelling and word recognition program post-transition, however, does appear to be most effectively developed through the use of a recognition of spelling pattern and sound correspondences as structured in the basic material of the *Early to Read Program.* Variations in the use of these patterns are noted in programs which are in development or press. The consensus seems to be that this kind of patterning is the logical follow-up to the use of i.t.a. in a beginning reading and writing program, based on teacher experience in both England and the U. S.

3. *Teacher Use of i.t.a.:* Teachers need to be supervised in their use of i.t.a. as well as in their instructional procedures. On occasion, some teachers will make spelling errors but these occur most frequently in the beginning weeks of school. Some of these errors may be attributed to incomplete learning, to anxiety concerning the use of the new medium, or to the pressure of classroom activity. Only a modicum of direction is needed at this stage since teachers report that their patterns of spelling behavior were self-improved as they taught children and that anxiety noted in the beginning stages of school was eliminated as children responded to instruction.

4. *Differentiating Instruction:* Since i.t.a. places no restraint on the teacher's behavior, typical grouping patterns can be utilized. Grouping patterns may be suggested by a given published program but, as noted in the Bethlehem program, such grouping patterns are soon modified by the rates of learning of children. Depending on the organizational skill of the teacher, however, individualized reading activity, grouping based on 5 through 14 levels of progress, or the standard 3 group procedure may be utilized. Attention to an individual's needs may be effectively given; small group instruction according to special ability, specific needs, or interest may be established; cross grouping may be utilized.

5. *The Use of t.o. Materials in i.t.a. Classrooms:* While the pupil learning in i.t.a. is surrounded by transliterated materials in the classroom, the world from which he comes is a t.o. world. Therefore, the child is given the freedom to choose t.o. materials in the library to examine or read to the extent he finds possible. Since approximately 65 percent of t.o. words are unchanged or are close approximations of i.t.a. forms, children can "read" t.o. materials fairly early in the first year of school and should be encouraged to do so. The threat of failure is never present and the child can begin, independently, to examine the world of t.o. print.

All areas of the curriculum, except arithmetic, in the first grade are either related to pictorial materials or are based on experience charts. Since the i.t.a. medium is used for such charts, there is no limitation on the curriculum. Arithmetic programs, related usually to workbooks, may often contain some t.o. words. While arithmetic materials are available in i.t.a. forms, there is no necessity to change such material. Teachers note that a given page of a workbook which contains t.o. words can be transliterated and duplicated, done orally without reference to the page, or duplicated on the blackboard. One or two words, such as *equals* for example, taught as sight words in a t.o. program may also be taught as sight words in an i.t.a. classroom while the child also learns to encode the sounds inherent in the word using i.t.a. A comparison of the i.t.a. and t.o. forms may be made at this time, or delayed, thus moving into transition activities informally. t.o. materials may be used naturally in classroom activities and t.o. library materials can appear as children begin to make independent transition and choose t.o. books. A status in being able to use t.o. materials has been recognized as existing early in the year. It has been seen, also, that children begin to explore such t.o. material with wide interest on the achievement fo first and second reader proficiency in i.t.a.

6. *The Curriculum and Instructional Materials:* No change in the elements of a first grade curriculum has been seen but changes in performance and the kind and level of materials children can utilize have been noted. Thus, second grade social study materials have been utilized effectively with children post-transition in the first grade. Greater reading proficiency has permitted the use of biographies of famous men in i.t.a. while also permitting depth study for longer periods of time for units in t.o. materials post-transition.

While none of the aspects of the curriculum need be eliminated, the correlation of all language arts activities in an i.ta.. based program is a natural development. Thus blocks of time may be devoted to instruction in reading, writing, speaking, listening, and post transition, to spelling. A change in teacher behavior to make greater use of the child's independence in reading and writing must be encouraged. The typical busy-work activities can be eliminated in favor of permitting the child to write or read independently.

8. *The Child Who Enters School Knowing How to Read:* Studies thus far have indicated that few children enter school with better than primer level reading ability. While our experience based on testing children reported as reading before entering school confirms these reports, experience has also indicated that no child who can read this well suffers from the use of i.t.a. but rather that his skill can be utilized, permitting more rapid i.t.a. achievement and early transition. The child who can read at a second reader level or above does not even need much t.o. instruction and the teacher would automatically continue his program in t.o.

Since the child's writing and seemingly, spelling behavior appear to be enhanced, placement of children who can read in i.t.a. environment at the beginning of the school year appears to have advantages. This advantage is also noted with children who enter an i.t.a. classroom from t.o. classrooms elsewhere. The teacher usually finds that such children can read i.t.a. materials at their t.o. instructional levels, can be quickly taught i.t.a. symbols, and, therefore, soon join the class in reading and writing activities.

9. *The Child Who Leaves i.t.a. Instruction Abruptly:* Reports and observations thus far indicate that no child transferring from i.t.a. to t.o. classes within the district or outside the district suffers from this change. In most cases, placement in t.o. materials one level below his i.t.a. instructional level is abruptly made prior to his leaving school and subsequent instruction continues in t.o. until the child moves. In such situations the child appears to have no great difficulty and moves with confidence into t.o. instructional materials. When a child leaves an i.t.a. class abruptly, the change to t.o. materials in the new school has been reported as rather typical. Most teachers have indicated that where reports on proper placement were not available, a trying-on-books procedure easily placed the child in

t.o. materials and instruction proceeded normally. Teachers report that they were not aware that the child had been taught differently and that, very often, reading skill was in advance of her usual class pattern. Writing and spelling activities were reported as normal.

9. *The Bi-lingual Child:* The use of an i.t.a. program with children from Puerto Rican homes where the child learns little or no English has been repeatedly experienced. The methodology utilized in developing language skill differs little from a t.o. program and differs only in that the teacher can begin instruction by associating the symbols of i.t.a. with the sounds inherent in the child's spoken language and follow this with speech activities which teach the child the sounds of English not present in his speech. Thus, speaking, reading, and writing of English may be encouraged by such instruction rather than developed only through class usage and sight word development.

What curriculum changes are necessary to meet the needs of children whose reading skill has been modified?

In any curriculum innovation, the major impact is on the classrooms of succeeding grade-levels. Teachers' attitudes, expectations, and goals have to be changed, and it is at this crucial point in the pupils' education that the effect of the innovation is often negated.

In the second year of using the i.t.a. in teaching children to read, it was the staff of fifteen teachers of second grade who required the most in-service education. They had to be alerted to the differing range of reading and writing skills, to the more sophisticated awareness that children had of the world around them and to the necessity for encouraging creative writing.

The differences in skill, attitude and knowledge of the fifteen i.t.a. taught classes from classes in the past had major implications for every curriculum area except arithmetic, art and physical education.

1. *Curriculum for Second Grade before 1964-1965.*

Before September, 1964, these teachers had a textbook-workbook-centered curriculum. The spelling program and the language program were dictated by workbooks. In reading the teachers expected to find children falling into three major categories:

—the able learner who may have begun a 2-1 reader near the end of the first grade
—the average learner who needed a readiness-review reader before beginning a second grade reader
—the slow learner whose skills fell sometimes at primer level and sometimes at book one level

The social studies curriculum was concerned with community helpers, national holidays and heroes, and any other unit the teacher chose to develop.

The science curriculum was structured on demonstrations and experiments suggested in the guide developed within the school system. There was no textbook and the children who could read, were encouragd to select pertinent books from the classroom library, drawn from the school's central library.

Manuscript writing was taught until December or January; then children were introduced to cursive writing. Manuscript was gradually phased out as children became competent in cursive.

2. *Curriculum Planning for Second Grade i.t.a.-taught Group*

In September, 1964 at the pre-school workshop the teachers of second grade were alerted to what possible differences they might expect in both the children and the curriculum. They were told that success lay in the degree of freedom they felt to experiment and to create.

The teachers were warned that the expectation was that able learners would be competent at least at a 3-1 level in reading and that there would be slow learners who still needed instruction at a Book 4—i.t.a. leve.l Therefore, they must plan for a wider range of achievement-level and provide for both i.t.a. and t.o. instruction.

The concern in using materials at a third grade level was whether the students could cope with the more sophisticated time-and-space concepts and social situations introduced.

When the discussion of the spelling curriculum was broached, the concerns were two: first, how did the teacher plan the curriculum without the formal list provided in the workbook, and second, what was to be done about children's free writing. The teachers were provided with the Rinsland list of the most commonly used words and an i.t.a. - t.o. dictionary. The recommendation was made that spelling patterns be the major focus of formal spelling lessons with all teaching of phonetic and structural analysis included in this area.

Children's writing could serve as the source for individual spelling activities. In this writing the teachers were urged to accept i.t.a. spelling within reasonable limits; that is, if a word had not been taught formally, the child should not be penalized for encoding in i.t.a. symbols.

The language curriculum would be based on children's needs as revealed by the misuse of punctuation and capitalization and by sub-standard sentence patterns and grammatical form.

In science and social studies the curriculum was to follow the pre-1964-1965 structure, but teachers were to encourage increased use of library books. A second grade social studies text was provided for the first time.

The teachers faced the 1964-1965 year with the feeling that there was no certainty as to the curriculum development in the second grade. This was frightening for many of them with long years of experience who had always depended on workbooks and manuals for planning. In succeeding monthly meetings, they asked for constant reassurance that they were "doing the right things."

3. *Curriculum Changes Through 1964-1965*

After the administration of the *Lower Primary Form* of the *California Reading Test* in the fall, the routine planning conference of teacher-principal-curriculum consultant was held. Teachers were reassured by the high retention of reading skill indicated by the test results. According to past practice, the children were grouped as able learners, average learners and slow learners with the teacher reminded that flexibility was desirable in moving a child from one level to another. Able learners were assigned 3-1 readers, average learners were usually assigned 2-2 readers and slow learners were continued in i.t.a. readers at the level of competency. These levels were overwhelmingly Book 5, 6, or 7. In three classes there were discovered some very slow learners who needed instruction at Book 3 or 4. These were children with low mental ability or English language deficiencies who had been "pushed" by preceding teacher as the first year ended.

The teachers were reminded to place emphasis in formal reading instruction on thinking and comprehension skills and vocabulary development and to provide opportunities for developing understanding and skill in phonetic and structural analysis in formal spelling activities.

By the end of the fourth week, the teachers were reporting enthusiastically that materials on a third-grade readability level were easy for able learners and most average learners, that children were intrigued by t.o. spelling patterns and were personally motivated to use t.o. spelling.

In late fall and early winter reports began to reach the supervising staff that the children regarded the second grade social studies book with scorn as "too babyish." The teachers began to use maps and globes and were encouraged to use third-grade level social studies texts. These were not too difficult even for those children who had made transition in second grade.

In one class, texts were used experimentally on a fourth-grade readability-level. The publisher wrote an anguished letter fearing that the materials would be misjudged. But the teacher's judgment was sound, for this class experienced no difficulty in dealing with concepts, vocabulary and sentence patterns.

Classroom procedures differed from classroom to classroom as teachers differed, but the monthly meetings served as a forum for the exchange of ideas and activities. Teachers reported such unusual activities as learning to use the card catalog and encyclopedias and reference books from the central library, reading in newspapers and periodicals, and progress from a pictionary to the junior dictionary.

The few teachers who introduced cursive writing in the transition from i.t.a. symbol writing reported some initial difficulty which disappeared by early winter. The teachers who followed a progression from i.t.a. to manuscript to cursive had no unusual difficulties. The major block seemed to be a result of the children's prolific writing. Writing cursive two spaces high took too much time and effort. They wanted to write one space high. In some situations this was met by providing practice in two-space-high forms and permitting free writing one-space high. Legibility, as would be expected, was a matter of motor development and individual motivation.

4. *Evaluation of Curriculum Changes in May, 1965*

At the last in-service meeting of the 1964-1965 year the teachers frankly evaluated the curriculum as it had developed and made recommendations for the 1965-1966 year.

No dissatisfaction with the development of reading programs was expressed. The usual comment was that the students had no difficulty using readers at third grade level. Some able learners were using fourth grade level readers with difficulty reported only in response to inferential questions. With slow learners who had not finished the i.t.a. program in first grade, the teachers recommended that they be introduced to t.o. basal readers either at a 2-1 level for rapid reading to insure confidence or at 2-2 level when teacher-judgment recommended this placement.

Teacher after teacher from schools in the lower socio-economic areas of the school system remarked that they had never before sent on to third grade so many children who would be ready to cope adequately with third-grade materials.

A dramatic example is the comparison of instructional levels at one school which draws a majority of children from Spanish-speaking area.

TABLE 41

Comparison of Instructional Levels in May, 1964 and May, 1965 in One Classroom

Instructional Levels	3/2	3/1	2/2	2/1	1/2	P	Total
May 1964........	—	—	6	12	3	4	25
May 1965........	6	12	—	5	—	2	25

Placement of the children with learning difficulties in this case also is revealing. At the end of the 1963-1964 year the decision was that three children would repeat second grade, three children would be placed in a special education class, and one child would be placed rather than promoted to third grade. In 1964-1965 two children were not promoted, one child was assigned to a special education class and one child was placed.

In evaluating the spelling curriculum the teachers reported that the list of most frequently used words was most helpful and that a program focused on spelling patterns was most successful. They asked that the number of Pictionaries and junior dictionaries be increased.

As far as children's reactions to t.o. spelling, the consensus was that they preferred t.o. spelling and that they regarded i.t.a. encoding with the rejection syndrome formerly associated with the movement into cursive writing; that is, i.t.a. encoding and printing, was "baby-stuff," and that the changes were signs of their growing-up.

Teachers recommended earlier and intensive attention to syllabication and accent and more lessons on homonyns, synonyms, and antonyms for next year's classes.

Language development activities focused primarily on the evidence of need revealed in children's writings. Paragraphing was the most difficult skill to teach, and the teachers suggested that the third grade curriculum should probably focus on developing the awareness of children to the need for paragraphing and to an outline as providing continuity and cohesion in compositions.

The teachers were enthusiastic about both the quality and quantity of children's compositions and reported highly gratifying competency in demonstrated use of periods, question marks, exclamation point, commas in headings, in direct address, and in words in series, and apostophes in contractions and the possessive case of nouns.

Both the science and the social studies curriculums needed breadth and depth. The recommendation was that a science text be provided for each child and that the multi-text classroom library be increased in both number and readability range. Third grade level social studies books should be provided for all i.t.a. classrooms and maps of the United States and the world and a 16″ globe were necessary. An increase in encyclopedias was recommended so that second and third grades would have them available.

Only three of the fifteen teachers were still seeking a prescribed spelling program at the end of the 1964-1965 year but they admitted that the children had not suffered from the lack of prescription. They agreed with the rest of the group that the children wrote the words that were in their speaking vocabularies fearlessly.

The music curriculum in Bethlehem is highly formalized and a music text is introduced in second grade. The music helping teachers reported much more success in using the text "because the majority of children can now read the words."

5. *Particular Administrative Problems*

Adminstratively the problem now is to preserve and build upon the body of knowledge, skills and attitudes these children will carry into third grade classrooms while motivating the inexperienced group of teachers of second grade to benefit from the 1964-1965 experience and the more advanced skills of the second contingent of i.t.a. first graders.

The first year had produced a run on paper stock which necessitated frequent reorders. The second year the paper stock was adequate because the stock-room knew what to expect. The squeeze comes in basal readers. In the middle of the year 3-1 and 3-2 readers were needed in every classroom from first through fourth. It can be anticipated that peak demands on certain levels of materials will continue as curriculum innovations are phased in.

D. *What implications are found for a modification of existing methods of training teachers for reading instruction?*

Workshop experience both with the Bethlehem teachers and with teachers from all parts of the country has indicated

—that few teachers have an adequate background in the history of the English language

—that a very small proportion of teachers have a conscious working knowledge of the sounds of English or an awareness of the spelling patterns usually used to represent them

—that a large number of teachers are unaware that their speech may be inaccurate or that this affects the teachers' expectancy of responses to instruction

—that a large number of teachers, though utilizing phonic and sight word procedures in eclectic programs, remain unaware of the wide variety of activities that might be utilized in aiding the child to develop reading skill

—that some teachers do not perceive that their personal dialects may differ markedly from the class norm and that certain sounds may be absent from their speech

—that many teachers' give minimum attention to the total language needs of the child

—that many teachers exhibit knowledge of reading as taught in materials of a given grade but seem unaware of the scope and sequence of word recognition skills in the curriculum of succeeding grades.

—that few primary school teachers (1st and second grade) are aware of the variety of topics or procedures which might be utilized to encourage creative writing.

E. *Recommendations*

The requirement of a course in phonetics as a prerequisite to courses in reading instruction has been difficult to implement since phonetics and/or the international phonetic alphabet are difficult to master. The use of i.t.a. in a course of basic reading instruction for the same purpose, however, has decided advantage in that it is relatively easy to teach and few teachers have difficulty in using it for encoding sound. While instruction in i.t.a. proceeds, whether or not the teacher will use i.t.a. in the classroom relevant history of the English language can be introduced to show the development of the traditional alphabet, the metamorphasis of spelling patterns and current influence for change in the language. As instruction in i.t.a. proceeds, the student becomes aware of the sounds of English, his own dialect and how it differs from the norm, and the spelling patterns usually representative of the sounds of English.

Thus, basic reading courses could utilize Pitman's i.t.a. to advantage in remedying many inadequacies currently noted while providing a natural basis for learning about methods of teaching reading. Initial reading instruction for teachers should, however, include the elements noted above so that the basic information a teacher needs is easily learned and less cumbersome in utilization. Such an initial program of instruction would include the following:

1. History of the English language
2. Analysis of the Spelling patterns for English sounds
3. Knowledge of and ability to use i.t.a. to transcribe sounds
4. Knowledge of and ability to use i.t.a. to transilterate print (words and short selections)

5. Relationship between i.t.a. symbols, the sounds of English, and the most frequent English spellings for given sounds
6. Approaches to teaching reading based on the above relationships which in turn should be related to learning theory and child development
7. Modification of behavior in the use of materials of published reading programs to meet the needs, abilities and interests of children.

Additional elements of such an instructional course should include:

1. Phonic approaches to t.o. reading, their advantage and limitations based on the spellings of English
2. Whole word approaches to teaching reading, their advantages and limitations based on learning theory, discovery procedures, and the spellings of English
3. The need for eclectic procedures.

Workshop training for the inservice teacher in the use of i.t.a. for reading and writing instruction follows the above pattern but eliminates a lengthy recitation or illustration of approaches or methods of instruction. However, a review of methodology using film clips provides a basis for illustrating good teaching technique. Such material provides for in-service teachers models for improvement.

The elements of the program for training in-service second grade teachers for post-i.t.a. instruction need further study and evaluation. Such teachers appear to need additional instruction on methods

—to provide for individual differences by differentiating instruction in reading

—to encourage differentiation of instruction in spelling

—to provide for the continuation of writing behavior of i.t.a.-taught children, and

—to provide for curriculum change related to the increased reading skill and improved work habits of i.t.a.-taught children.

Teacher behavior thus far indicates that some second grade teachers cling to old ways, for instance expecting children to write only once a week or demanding perfection in t.o. spelling commensurate with the child's writing and reading skills. Such patterns were not readily corrected and procedures for teacher-change require further evaluation and study.

A question on the "best" time for the introduction to cursive t.o. writing resulted in the trial of various times for the introductions of such activity (2nd month through 8th month). No timing seemed optional. The recommendation which seems most desirable reflects concern for the elimination of possible inhibiting factors on the child's writing behavior. Thus, delay in using cursive writing as long as possible seems the wisest course of action, yet no negative effects were observable when the early use of cursive writing post-i.t.a. was permitted.

Part IV.
Conclusions and Implications

Among many characteristics of the educational milieu in America, there are several that deserve emphasis here: an unfortunate formal and artificial compartmentalization of the curriculum, widely disparate views concerning the most desirable methods for teaching reading and writing, an extensive need for remedial measures to increase literacy, and widespread sense of discouragement along with the conviction that there are dim prospects for making significant changes. The three-year demonstration of the use of i.t.a. has made a very clear contribution toward improved procedures for teaching reading and writing to children. In addition ,the demonstration has brought to attention the need to break down artificial curriculum compartments and the ease with which the curriculum can become integrated. It is further indicated that the purpose of achieving skill in reading and writing can be used *also to bring into play a flexibility in approaches to the use of learning* methodologies for teaching and the variant sense-modes and rates of learning. Finally, it points up the prospect that there can be a significant diminution of illiteracy among first grade children and consequently among any group subsequently ordered from those having had i.t.a .experience as first grade children.

The use of the i.t.a. medium has been of significant value in eliminating some of the frustrations that have characterized the teaching of teachers to meet the educational needs of children. At the same time it has shown effective and rapid development of reading and writing skill.

This demonstration has evaluated a teaching model for transition from i.t.a. to t.o. Over the three years, two distinct populations in one school system have been studied. The second group effectively provides a two-year replication of the initial three year group. The model a) used consistent methodology, b) controlled teacher-behavior, curriculum and time spent on teachin gthe language arts, and c) met individual differences by using a variety of printed materials. Obviously, also, the evaluation included comparison between i.t.a. and t.o. taught samples.

The three-year evaluation shows that children in i.t.a. materials:

1. Advance more rapidly in reading and writing experiences; achieve significantly superior reading skill at an earlier time; read more widely; and write more prolifically, more extensively, and with a higher degree of proficiency, than their t.o. counterparts and have no difficulty in making a reading transition to t.o. materials when they are allowed to develop sufficient confidence and efficiency.

2. Develop very high spelling skill in i.t.a. (better described as encoding) fairly early. The transition to spelling in t.o. appears relatively easy in the two years subsequent to initial reading when directed instruction and guidance in spelling are given, and the achievement in spelling on standardized tests and in creative writing in significantly better than the achievement of t.o. taught children at the end of the second and third years under such an instructional program.
3. Achieve word recognition in t.o. at the end of the first and second years significantly better than t.o.-taught children but this superiority is not retained at the end of the third year.
4. Show lack of the inhibitions in writing which are commonly found early in the first year, and this expressiveness continues into the second and third years. Significant accomplishments are found in these children's creative writing in terms of the number of running words and the number of polysyllabic words used. No differences in the use of the mechanics of reading were found between the i.t.a.-and t.o.-taught populations.
5. Have higher comprehension as this is indicated by instructional levels and reader level achievement in all years. Standardized tests in comprehension shows that the i.t.a. population does not differ from the t.o. population.
6. Have experienced no deleterious effects on such measures as rate of reading or accuracy of reading, suggesting that the i.t.a. to t.o. procedure establishes no negative characteristics, no hindrances on later achievement.

The above findings were generally confirmed by the two-year replication study. No significant differences were found on the word meaning subtest between the second year populations of the first replication study. Measures of word recognition, such as the Fry list, showed significant achievement differences in favor of the i.t.a. population.

Because it can reasonably be expected that most achievement differences will diminish in time when no unique post-i.t.a. procedure are used, a lack of positive longitudinal effects of i.t.a. at some future period does not negate its use, nor diminish its established values. We believe that i.t.a. has been demonstrated to provide an effective approach to the solution of a variety of educational problems.

ADDENDUM

Observations and Subjective Reactions at End of First Year

(This section of the report has been organized as responses by Dr. Rebecca Stewart and Dr. Mazurkiewicz to specific questions. Because each of the responses was prepared separately by the individual, a degree of redundancy is apparent. Apparent, also, is the close agreement of the respondents though responding subjectively. In some cases one or the other makes no response.)

(1) How does i.t.a. affect the normal operation of a school program?

DR. STEWART:

An i.t.a. program entails no real change in the normal operation of a school program once it has been accepted as part of the curriculum. Neither are the administrative problems unique to i.t.a.; they are part and parcel of any curriculum change. The administration has the problems of seeing that the classrooms have materials of instruction, that in-service training is more than adequate, that staff-acceptance is assured, that the natural human reluctance and fear of change are overcome, and that the communtiy understands and supports the change.

(2) What effects does i.t.a. teaching have on the first grade curriculum?

DR. STEWART:

The first grade curriculum under i.t.a. has provided for the students a unified approach to acquiring the skills and knowledge crucial to the development of communication skills. The fact that the student is introduced to the sound symbols as representative of the phonemes of speech and uses them concurrently in speaking, listening, reading and writing, reinforces learning. The result is that teachers originally feel that they are devoting more of classroom time to reading. However, when the allotments of time fractionated into the teaching of reading, the teaching of writing, and the teaching of language arts under the basal reader approach are totaled, there appears to be no more time involved in either type of classroom.

The unique contribution of i.t.a. to the first grade curriculum is the opportunity it provides for first-graders to write independently and freely. The almost complete absence of the sentence fragment would surprise secondary school teachers and raises the question "How and why do children 'learn' to write fragments?" The sensible use of punctuation is also apparent. It appears to be learned inductively. The level of conceptualization, on the average, is higher than apparent in the past. An unexpected dividend is the catharsis, writing down feelings and putting on paper reactions to problems, provided for the children whose anxieties and frustrations are quite real. Teachers say that, as a result, their understanding of individual children is expanded.

DR. MAZURKIEWICZ:

In general, i.t.a. teaching appears to have no effect on the math portions of the curriculum but exerts an influence on the remainder. Teacher reports indicate a greater ability and freedom in integrating all areas of the curriculum. Social studies and science experiences continue to be emphasized as being book related. More activities relate to daily news events and experiences. Writing activities are most affected in that reading and writing are taught simultaneously and then each is given attention separately. Integration of the language arts becomes a more natural development. Less interest in play activity was noticeable in that children expressed a preference for "work." They indicate a desire to read and write in their free time.

(3) Does the transfer in or out of pupils cause difficulties? How are these solved?

DR. STEWART:

The transfer of children in and out of classrooms has been met in several ways. Within the system we have tried to place children in either t.o. or i.t.a. classes according to placement at the dismissing school. Occasionally this was impossible when the receiving school had only one first grade classroom and that one using the initial teaching alphabet. This situation occurred only in isolated cases and the transferring children had been having difficulty in the traditional program. The i.t.a. teacher began with an individualized program in introducing the initial teaching alphabet. These children learned rapidly, as much from their peers as from the teacher, and soon fitted into a group for instruction. When children in i.t.a. classes moved out of the district, transition was begun in the classroom by making an assessment of the instructional reading level in traditional print. The student was then instructed in a basal reader and a workbook at this level. A letter describing the research project, an estimate of the child's reading level and a recommendation of placement was sent to the receiving school.

If a child well advanced in reading in the traditional medium had to be placed in an i.t.a. classroom, individualized instruction was provided. This procedure was based on the hypothesis that it was reasonable to expect that such a child would soon become expert in reading i.t.a. also, and eventually instruction would be undertaken in a group. The ability to read in t.o. was maintained in free reading in the same way that i.t.a.-instructed children read t.o. materials by choice.

DR. MAZURKIEWICZ:

Transfer of a child out of one school into another school within the district where each class uses i.t.a. presents no difficulty. Transfer of a child to a school using traditional alphabet materials either in or out of the district represents little difficulty. When a child is scheduled to move, he is tested to determine his competency in reading achievement in traditional orthography. His achievement as well as his instructional level in traditional orthography is then reported to the school to which he is going. The teacher at the same time moves the child from i.t.a. instruction to traditional orthography materials and in effect brings about an abrupt transition. To date no child has proven to have any difficulty in making this kind of abrupt transition.

Parents generally have attempted to keep their child in school as long as possible. Sometimes they delayed the mother's move until the last moment.

But when a transfer occurs the school to which he is going has been fully informed of the kind of program he has been in and the kind of activities he should necessarily be expected to engage in.

Reports from schools who have received such children indicate that at first the reaction has been one of panic in getting a child who has been taught in the i.t.a. medium and who therefore presents an unknown quantity to either the new teacher, the principal, or the district. All schools, however, have used the child's entrance into their school as an opportunity to study the effect of i.t.a. on the student. They report that they are agreeably surprised to find that the child is in advance of the class's most able group and that no difficulty was experienced in providing continuous sequential instruction.

When a child from a traditional orthography classroom is transferred into a school where only i.t.a. is used, the teacher finds that the child is somewhat behind in reading achievement regardless of the point in the school year at which he arrives. This means that the teacher feels he has a general lack of phonic or word recognition skills. She then plans to develop these skills to the potential he is capable of as quickly as possible. This presents no real problem, but does require the teacher to devote more time to the individual.

(4) What implications do the results of i.t.a. work suggest for the second year curriculum?

DR. STEWART:

The second year curriculum will undergo radical changes. Most crucial will be the planning necessary to meet the increased range of instructional levels of the population. This entails the careful assessment of the conceptual level of understanding, the level of vocabulary understanding and control of work study skills.

In spelling, the traditionally structured program will not be suitable because many of the words "taught" previously will have already been "learned" by children in i.t.a. classes. The development of spelling achievement will therefore center on spelling patterns and the development of phonetic and structural analysis skills. Formerly these have been taught as part of the reading program.

It is anticipated that dictionary use will be introduced in order to give the children a tool to check spelling and word meaning.

The science curriculum has been designed around units emphasizing physical as well as natural science. A multi-text classroom set of science books will be placed in each classroom so that the development of the units will not be teacher-responsibility alone. The students will begin to read to learn and will have opportunities to consult authorities and to compare points of view. This will, of course, be supplemented by utilization of the central library in each school.

The question in the social studies curriculum centers around the level of conceptualization. Can students who can read freely and with understanding, materials written for so-called third and fourth grade students move beyond the community and community-helpers-centered curriculum of the traditional second grade social studies curriculum? Is the sequence of the development of time-and-space supported by past research a valid concept? A range of commercial texts and free use of library resources may give tentative answers this coming year.

The arithmetic program will continue its emphasis on a modern approach, providing for understanding and development of concepts through discovery and manipulation.

At all costs the composition skills demonstrated by i.t.a. students must be preserved and built upon. Every effort will be made to see that the writing skills, the creative use of language, and the development of mechanical correctness will be a crucial focus of the second year curriculum in language arts skills.

DR. MAZURKIEWICZ:

In examining the levels of reading ability in i.t.a. the implication for the second year is that the child who makes the transition should in effect be reading with a high degree of facility at a third reader level. This suggests that the second year's program cannot be a repetition of the typical one. The child's needs indicate that he must be moved on to 3^1 level materials in traditional orthography and that much of the word recognition skill program which normally is found in traditional materials 3^1, 3^2 levels becomes redundant. This suggests that much of the phonic skills and phonic rules should be eliminated in favor of a continuation of activities in recognizing spelling patterns for given sounds, and an extension of skill in dealing with structural anaylsis and syllabication skills. In the projected program several different approaches to dictionary skill work will be conducted. Pictorial materials as well as the earliest dictionary materials will both be available to the child for his use.

Spelling can proceed logically at this point on the basis of recognition and use of the most frequent spelling patterns for given sounds in the language. The spelling dictionary concept will also be provided to the child who has made the transition to t.o. This concept permits the child who can pronounce a given word, and therefore on the i.t.a. basis can read it or easily recognize it in a list of words, to find the correct traditional spelling following the i.t.a. spelling. He will be encouraged to use this for correction of words in an exercise or use it for proof-reading corrections in a creative writing exercise.

(5) Are teachers able to meet and solve the problems which arise from i.t.a. teaching?

DR. STEWART:

When one looks at the teachers in the i.t.a. program, one can only be enthusiastic about their adaptability to change. Initially there was anxiety because past experience provided no benchmarks for measuring student progress, but as students demonstrated independence, perseverance and self-motivation in learning, the teachers relaxed. Several areas of teaching, for instance, vocabulary development and structural analysis, were new because first-grade teachers traditionally have not had to be overly concerned about them, but as children demonstrated developing skills, teachers experimented with ways to provide learning opportunities.

Individually, teachers have developed with the children the ability to hear phonemes. As a result, speech patterns have improved. Also the environment of classrooms is informed and relaxed yet busy as busy can be. Teacher-pupil relationships give evidence of mutual respect and shared responsibility for learning.

DR. MAZURKIEWICZ:

The teacher has indicated by her activity that no problem is insurmountable in giving normal reading instruction using the i.t.a. medium. Prior to the year's activities, many of the teachers had transliterated the materials they found particularly helpful or particularly interesting to children in a first grade situation.

Because children's needs are more readily identifiable and because the rates of learning are seemingly easier to recognize, the teacher establishes more groups. While she might start with one group and at the end of two weeks have two groups, by the second month she may have five to six groups in operation. This does not present the handicap that it would suggest since the teacher reports that once guided purposeful reading activities are structured, the child is independent of the teacher. He can return to his seat for silent reading while she can go on to instruct an entirely new group. Thus her day is more flexible. She can work with each of the children during a given day in reading, word recognition and writing activities. To some extent teachers find it feasible to teach many of the word recognition principles such as compound words, contractions, possessives, plurals, and comparatives to the entire group rather than to one group at a time.

The teacher's problem basically resides in her initial activity in transliterating sound or in transcribing sound. These difficulties have not proven difficult for the teacher to resolve. The teacher had habit difficulties which were indicated in her continuing to write s for zuh sound in such words as hi*s*, bu*s*iness, sci*ss*ors, etc. While the teacher might correct her spelling in one or two words, she was not always consistent.

(6) Can the teacher create typical supplementary materials for reading program needs?

DR. MAZURKIEWICZ:

Many teachers found it desirable, because of the dearth of supplementary materials at the early stages, to transliterate many of the basal program materials from t.o. into i.t.a. for supplementary use. They also developed duplicated materials to add to the activities found in the basic program, to meet the needs of some children for extension repetition-type activities, to provide depth to a program of reading instruction of language arts instruction by including the favorite poem of teacher, expository materials related to the current seasonal period, and poetry.

(7) Are teachers comfortable in teaching under i.t.a.?

DR. MAZURKIEWICZ:

During the first two weeks of instruction teachers generally indicated a great deal of insecurity and anxiety about their ability to transcribe sounds. However, after the first two week period and after observation of the teachers had taken place at least once, during which time help was given in overcoming residual spelling difficulties, the teacher became quite comfortable in the situation. According to observations and teacher reports, the teacher felt challenged and began to show enthusiasm. Her degree of security in dealing with i.t.a. increased as she became more competent. By the sixth and seventh month of school the teacher found herself challenged by the children's abilities and needs but found that i.t.a. presented no particular challenge at this point.

It must also be admitted that in the early stages the teacher felt somewhat insecure and anxious in the face of a lack of appropriate materials. When the final pieces of the basic materials and a sizable supplementary reading library were available, insecurity subsided. A normal program of instruction for the following year can be expected to occur since a complete basic program and a wide selection of supplementary materials are now readliy available.

(8) What effect has i.t.a. teaching on the teacher?

DR. MAZURKIEWICZ:

The answer to this seems most nearly accurate when a description of her enthusiasm for teaching is noted. She reports tremendous interest in dealing with children who respond differently. These differences she defines primarily in terms of their ability to read early, and to write prolifically by the fourth and fifth month of school. She notes the child's high degree of competency in the word recognition skills area. She notes his seemingly inexhaustible supply of energy for learning. She becomes "exasperated" at times at the child's unwillingness to go out and play, preferring to remain in the classroom and work—that is to read or write. While, of course, the first year's use of any new technique may itself create enthusiasm, it appears that these teachers will maintain their enthusiasm for teaching the new first grader. At any rate they look forward to the second year of teaching with i.t.a. and generally comment that this year's experience has been so challenging that, if given a choice they would prefer to continue in i.t.a. teaching and would be unhappy in returning to a t.o. situation.

(9) What unusual developments have you noted?

DR. MAZURKIEWICZ:

The child's writing ability develops rapidly. He has no difficulty encoding sound. Once he has mastered the concept of writing as being a reflection of his speech and learns that he can communicate with others, his enthusiasm and self-motivation are pronounced. He writes prolifically and will spend his free time writing. Some of the stories have indicated that the child is using writing as a form of catharsis; in many stories the child expresses his feelings and emotions openly. The extensive writing that occurs has been identified by observers as being comparable to a fourth or fifth grader's production.

Just as the child has developed self-motivation in writing, so too has he developed self-motivation in reading activity. He appears to want to continue learning, to be challenged. His initial success evidently breeds a desire for further success and a desire to deal with the complex procedure of traditional orthography. This is believed to be the reason why transition has proceeded as a natural evolution. The child's self-motivation, his desire to deal with the more complex material of t.o., seems to be a reflection of the fact that the ego-strength with which he enters first grade is not diminished but remains at a high point.

In the drawings of most of these children, and particularly in the drawings of children who illustrate the text of a story, a great deal more *movement* is identified than typically found in the art of first grade children. In Rorshachian terms this would suggest that a higher degree of intellectual potential has been developed. However, a probably more valid conclusion is that the child's inherent potential is no longer being masked, or being inhibited.

(10) Are costs comparable for an i.t.a. program when compared with typical t.o. programs?

DR. STEWART:

The cost of the introduction of an i.t.a. program in first grade is somewhat more expensive than a typical t.o. program because of the need to provide a specialized initial library and an increase in the number of textbooks. The item which affects the budget crucially is composition paper. The insatiable desire to write and the length of the compositions triples the demand for paper.

(11) How does i.t.a. affect promotion and grading standards?

DR. STEWART:

Grading standards are in a state of flux this year because a first year provides no basis of expectation. Also the level of reading achievement after transition will have some effect in relation to setting up grading standards that parents will understand. In past years promotion to second grade was based on the teacher's estimate of the child's mastery of skills and vocabulary at primer-level. It was agreed for this first year that demonstration of the abilities to blend sound symbols, to write a sentence, and to read easily in i.t.a. Book 4 was to be crucial in the determination of promotion. There is a significant difference in non-promotions this year. The reliability of the tentative standards needs to be tested in the arena of the second grade classroom.

(12) Would you continue i.t.a. program as a normal instructional procedure at this time without specific knowledge of the results of standardized testing?

DR. STEWART:

The results of the standardized testing would not affect a decision to continue with i.t.a. as a normal instructional program. The contrast in children's attitudes toward learning to read, in independence of word attack, in perseverance in learning tasks, in freedom of written expression and in confidence in reading are values one cannot provide through a traditional basal reading program. There is no apparent difference in the appeal of the program to boys and girls. Under the traditional programs boys usually had more difficulties in the initial reading task, and there is ample evidence of the greater number of boys identified as having reading disabilities in upper elementary grades. If boys are as well motivated after transition, then the i.t.a. program makes a basic contribution in eliminating sex as a factor in reading success.

(13) What is your feeling concerning effects on the slow learner and bi-lingual child?

DR. STEWART:

The slow learners showed an unexpected degree of self-motivation and confidence in the learning situation. Frankly, they are succeeding in learning to read though not as rapidly as the majority of their peers. Moreover, with a measure of success provided, they appear to have a realistic acceptance of their ability level and evaluate themselves in relation to personal growth rather than in relation to the success of peers.

Bi-lingual children benefit from the opportunities to learn to pronounce and use English correctly. The production of English speech sounds for both bi-lingual children and children with speech difficulties has shown improvement.

DR. MAZURKIEWICZ:

No generalization concerning the effects on the slow learner can be made since we have seen some children who seem to be slow learners make unexpected achievements. Other slow learners, seemingly because of a lack of linguistic experience, have made relatively slow progress. In all cases, however, slow learners have shown improvement and it seems possible that even the slow learner, by the end of the second year in an i.t.a. instructional program will make the transition to traditional orthography.

The bi-lingual child again cannot be described in general terms. We have noted that Puerto Rican children having a high degree of linguistic handicap (in that they were unable to speak English or at least were unable to communicate in the normal sense with their teachers or classmates at the beginning of the program) have demonstrated sufficient skill in some cases to be among the top learners of a given group. Others have not demonstrated this kind of significant progress. In most cases the bi-lingual child seems to have been helped dramatically in learning the sounds of English and therefore in beginning to speak and communicate with a degree of accuracy. This is most noted in the child's writing behavior. While sentences tend to be somewhat terse, and more like the pattern expected of a child who is exposed to the short clipped sentences of the typical t.o. pre-primer, this child's language development, indicated by his usage of words and his ability to communicate in English, is quite strong.

(14) Is there any group of children for whom i.t.a. work is not recommended in your estimation?

DR. STEWART:

At the end of this first year of experience with the i.t.a. program I believe that every group of children benefits. The freedom to read and write widely is of advantage to able learners, and the absence of the confusions and illogical patterns in print help children of all levels of maturity to learn to read easily. The problems of the child with emotional or psychological difficulties need close attention. Identification of these children usually begins in first grade because of learning difficulties. It will be interesting to examine the differences in identification patterns and achievement levels of such children as the research project moves into the second and third year.

DR. MAZURKIEWICZ:

Based on this first year's experience we have seen no intellectual or socio-economic group for which i.t.a. would not be recommended. Which of the various intellectual and socio-economic groups seems to benefit most from i.t.a. instruction has not as yet been determined.

(15) What limitations on the first grade program do you see as a result of the use of i.t.a.?

DR. STEWART:

The use of the initial teaching medium in first grade sets no limitation on the first grade program. On the contrary, I believe the program frees the teacher to teach with fewer frustrations and feelings of failure and the pupils to learn confidently and independently.

DR. MAZURKIEWICZ:

No limitations on the first grade program are seen as a result of the use of the i.t.a. medium approach to reading instruction. While all of the various aspects of a first grade curriculum are continued, there is the addition of much more to the day's activities from the world of life and the news. Learning is easily related to the experiences of the child outside of school. A greater depth and precision is developed in the child's writing and in communication.

The simple notational system for beginning reading and writing instruction, together with the opportunity to integrate instruction in language arts, seem to expand rather than limit the first grade curriculum.